



## ENVIRONMENTAL PROTECTION AGENCY

### 40 CFR Part 52

[EPA-R03-OAR-2022-0347; FRL-9333-01-R3]

#### Federal Implementation Plan Addressing Reasonably Available Control Technology Requirements for Certain Sources in Pennsylvania

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Proposed rule.

**SUMMARY:** The Environmental Protection Agency (EPA) is proposing a Federal implementation plan (FIP) for the Commonwealth of Pennsylvania (Pennsylvania or the Commonwealth). This FIP proposes to set emission limits for nitrogen oxides (NO<sub>x</sub>) emitted from coal-fired electric generating units (EGUs) equipped with selective catalytic reduction (SCR) in order to meet the reasonably available control technology (RACT) requirements for the 1997 and 2008 ozone national ambient air quality standards (NAAQS). The FIP is being proposed to ensure that EPA can, if necessary, meet a court-ordered deadline requiring EPA to approve an amended State Implementation Plan (SIP) or issue a FIP by August 27, 2022. This action is being taken under the Clean Air Act (CAA).

**DATES:** Comments must be received by July 11, 2022.

*Public hearing:* EPA will hold a virtual public hearing on June 9, 2022. Please refer to the **SUPPLEMENTARY INFORMATION** section for additional information on the public hearing.

**ADDRESSES:** You may send comments, identified by Docket ID No. EPA-R03-OAR-2022-0347; via the Federal eRulemaking Portal: <https://www.regulations.gov/> (our preferred method). Follow the online instructions for submitting comments.

*Instructions:* All submissions received must include the Docket ID No. for this rulemaking. Comments received may be posted without change to <https://www.regulations.gov/>, including

any personal information provided. For detailed instructions on sending comments and additional information on the rulemaking process, see the “Public Participation” heading of the **SUPPLEMENTARY INFORMATION** section of this document. Out of an abundance of caution for members of the public and our staff, the EPA Docket Center and Reading Room are open to the public by appointment only to reduce the risk of transmitting COVID-19. Our Docket Center staff also continues to provide remote customer service via email, phone, and webform. Hand deliveries and couriers may be received by scheduled appointment only. For further information on EPA Docket Center services and the current status, please visit us online at <https://www.epa.gov/dockets>.

**FOR FURTHER INFORMATION CONTACT:** David Talley, Permits Branch (3AD10), Air & Radiation Division, U.S. Environmental Protection Agency, Region III, 1650 Arch Street, Philadelphia, Pennsylvania 19103. The telephone number is (215) 814-2117. Mr. Talley can also be reached via electronic mail at [talley.david@epa.gov](mailto:talley.david@epa.gov).

## **SUPPLEMENTARY INFORMATION:**

### **I. Public Participation**

#### **A. Written Comments**

Submit your comments, identified by Docket ID No. EPA-R03-OAR-2022-0347 at <https://www.regulations.gov> (our preferred method), or the other methods identified in the **ADDRESSES** section. Once submitted, comments cannot be edited or removed from the docket. EPA may publish any comment received to its public docket. Do not submit to EPA’s docket at <https://www.regulations.gov> any information you consider to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Multimedia submissions (audio, video, etc.) must be accompanied by a written comment. The written comment is considered the official comment and should include discussion of all points you wish to make. EPA will generally not consider comments or comment contents located outside of the primary submission (i.e., on the web, cloud, or other file sharing system). For additional

submission methods, the full EPA public comment policy, information about CBI or multimedia submissions, and general guidance on making effective comments, please visit <https://www.epa.gov/dockets/commenting-epa-dockets>.

Due to public health concerns related to COVID-19, EPA Docket Center and Reading Room are open to the public by appointment only. Our Docket Center staff also continues to provide remote customer service via email, phone, and webform. Hand deliveries or couriers will be received by scheduled appointment only. For further information and updates on EPA Docket Center services, please visit us online at <https://www.epa.gov/dockets>.

EPA continues to carefully and continuously monitor information from the Centers for Disease Control and Prevention (CDC), local area health departments, and our Federal partners so that we can respond rapidly as conditions change regarding COVID-19.

#### B. Participation in Virtual Public Hearing

Please note that because of current CDC recommendations, as well as state and local orders for social distancing to limit the spread of COVID-19, EPA cannot hold in-person public meetings at this time.

EPA will begin pre-registering speakers for the hearing no later than 1 business day after publication of this document in the **Federal Register**. To register to speak at the virtual hearing, please use the online registration form available at <https://www.epa.gov/pa/epa-meetings-and-events-pennsylvania>. The last day to pre-register to speak at the hearing will be **[INSERT DATE 10 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. EPA will post a general agenda for the hearing that will list pre-registered speakers in approximate order at: <https://www.epa.gov/pa/epa-meetings-and-events-pennsylvania>.

The virtual public hearing will be held via teleconference on **[INSERT DATE 15 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. The virtual public hearing will convene at 4 p.m. Eastern Time (ET) and will conclude at 7 p.m. ET. EPA may close a session 15 minutes after the last pre-registered speaker has testified if there are no

additional speakers. For information or questions about the public hearing, please contact Ms. Karen Delgrosso at [delgrosso.karen@epa.gov](mailto:delgrosso.karen@epa.gov). EPA will announce further details at <https://www.epa.gov/pa/epa-meetings-and-events-pennsylvania>.

EPA will make every effort to follow the schedule as closely as possible on the day of the hearing; however, please plan for the hearings to run either ahead of schedule or behind schedule.

Each commenter will have 5 minutes to provide oral testimony. EPA encourages commenters to provide EPA with a copy of their oral testimony electronically (via email) by emailing it to [delgrosso.karen@epa.gov](mailto:delgrosso.karen@epa.gov). EPA also recommends submitting the text of your oral comments as written comments to the rulemaking docket.

EPA may ask clarifying questions during the oral presentations, but will not respond to the presentations at that time. Written statements and supporting information submitted during the comment period will be considered with the same weight as oral comments and supporting information presented at the public hearing.

Please note that any updates made to any aspect of the hearing will be posted online at <https://www.epa.gov/pa/epa-meetings-and-events-pennsylvania>. While EPA expects the hearing to go forward as set forth above, please monitor our website or contact Ms. Karen Delgrosso at [delgrosso.karen@epa.gov](mailto:delgrosso.karen@epa.gov) to determine if there are any updates. EPA does not intend to publish a document in the **Federal Register** announcing updates.

If you require the services of a translator or special accommodations such as audio description, please pre-register for the hearing and describe your needs by **[INSERT DATE 10 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. EPA may not be able to arrange accommodations without advanced notice.

## **II. Background**

### **A. RACT Requirements for Ozone**

The CAA regulates emissions of NO<sub>x</sub> and volatile organic compounds (VOC) to prevent

photochemical reactions that result in ozone formation. RACT is an important requirement for reducing NO<sub>x</sub> and VOC emissions from major stationary sources and sources covered by EPA's control technique guidelines (CTG). Areas designated nonattainment for the ozone NAAQS are subject to section 182(b)(2) of the CAA which sets forth RACT requirements specific to ozone nonattainment areas classified as Moderate nonattainment or higher.

Specifically, section 182(b)(2) of the CAA sets forth three distinct requirements regarding RACT for the ozone NAAQS. First, section 182(b)(2)(A) requires states with ozone nonattainment areas designated Moderate or higher to submit a RACT rule (or negative declaration) for each category of VOC sources in the area covered by a CTG document issued by EPA between November 15, 1990, and the date of attainment for an ozone NAAQS. Second, section 182(b)(2)(B) requires a RACT rule (or negative declaration) for all VOC sources in the nonattainment area covered by any CTG issued before November 15, 1990. Third, section 182(b)(2)(C) requires a RACT rule or rules (or negative declaration) for any other major stationary sources of VOCs located in the nonattainment area.

In addition, section 182(f) subjects major stationary sources of NO<sub>x</sub> to the same RACT requirements that are applicable to major stationary sources of VOC. Therefore, the RACT requirement for major stationary sources found in 182(b)(2)(C) applies to sources of NO<sub>x</sub>. A "major source" for purposes of RACT applicability in section 182 is defined based on the source's potential to emit (PTE) of NO<sub>x</sub>, VOC, or both pollutants, and the applicable thresholds are defined based on the classification of the nonattainment area in which the source is located. See sections 182(c)-(f) and 302 of the CAA. The ozone RACT requirements under section 182(b)(2) are usually referred to as VOC CTG RACT, non-CTG major VOC RACT, and major NO<sub>x</sub> RACT.<sup>1</sup>

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<sup>1</sup> This proposed FIP pertains only to the major NO<sub>x</sub> RACT requirements for Pennsylvania's coal-fired EGUs already equipped with SCR (five facilities in total).

Section 184(a) of the CAA, which was added by the 1990 Amendments to the CAA, established an Ozone Transport Region (the OTR) comprised of all or parts of 12 eastern states, and the District of Columbia, including all of Pennsylvania.<sup>2</sup> Section 184(b)(1)(B) extends the VOC CTG RACT requirements in section 182(b)(2)(A) and (B) to all areas in the OTR regardless of NAAQS attainment status. Put another way, because the entire State of Pennsylvania is in the OTR, the requirements of CAA section 184 apply statewide even if all areas of the State were attaining the ozone NAAQS. Further, section 184(b)(2) states that “any stationary source that emits or has the potential to emit at least 50 tons per year (TPY) of volatile organic compounds shall be considered a major stationary source and subject to the requirements which would be applicable to major stationary sources if the area were classified as a Moderate nonattainment area.” This language applies the RACT requirement of 182(b)(2)(C) to all stationary sources in the OTR that have a PTE of at least 50 TPY of VOC. The EPA further clarified in 1992 that for purposes of applying section 182(f) requirements to NO<sub>x</sub> sources in the OTR, and certain other areas, a major stationary source for purposes of NO<sub>x</sub> RACT applicability will be defined as any stationary source in the OTR that emits or has the potential to emit 100 tons per year or more of NO<sub>x</sub>.<sup>3</sup> In total, these RACT requirement in section 184 are referred to as “OTR RACT.”

Since the 1970’s, EPA has consistently defined RACT as “the lowest emission limit that a particular source is capable of meeting by the application of the control technology that is reasonably available considering technological and economic feasibility.”<sup>4</sup> Since then, EPA has provided more substantive information on RACT requirements through implementation rules for

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<sup>2</sup> <https://www3.epa.gov/region1/airquality/noxract.html>

<sup>3</sup> See “State Implementation Plans; Nitrogen Oxides Supplement to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990,” 57 FR 55620, 55622 (November 25, 1992).

<sup>4</sup> Memo, dated December 9, 1976, from Roger Strelow, Assistant Administrator for Air and Waste Management, to Regional Administrators, “Guidance for Determining Acceptability of SIP Regulations in Non-Attainment Areas,” p. 2, available at [https://www3.epa.gov/ttn/naaqs/aqmguid/collection/cp2/19761209\\_strelow\\_ract.pdf](https://www3.epa.gov/ttn/naaqs/aqmguid/collection/cp2/19761209_strelow_ract.pdf) and 44 FR 53762, footnote 2 (September 17, 1979) (Strelow Memo).

each ozone NAAQS, and has issued additional guidance documents on RACT.<sup>5</sup> In 2004 and 2005, EPA promulgated an implementation rule for the 1997 8-hour ozone NAAQS in two phases: “Phase 1 of the 1997 Ozone Implementation Rule;” and “Phase 2 of the 1997 Ozone Implementation Rule.” See 69 FR 23951 (April 30, 2004) and 70 FR 71612 (November 29, 2005), respectively. Particularly, the Phase 2 Ozone Implementation Rule addressed RACT statutory requirements under the 1997 8-hour ozone NAAQS. See 70 FR 71652.

On March 6, 2015, EPA issued its final rule for implementing the 2008 8-hour ozone NAAQS (the “2008 Ozone SIP Requirements Rule”). See 80 FR 12264. At the same time, EPA revoked the 1997 8-hour ozone NAAQS, effective on April 6, 2015. The 2008 Ozone SIP Requirements Rule provided comprehensive requirements related to the revoked 1997 8-hour ozone NAAQS, codified in 40 CFR part 51, subpart AA. EPA determined that areas designated nonattainment for both the 1997 and 2008 8-hour ozone NAAQS at the time the 1997 8-hour ozone NAAQS was revoked retain certain nonattainment area requirements (i.e. anti-backsliding requirements) for the 1997 8-hour ozone NAAQS, including RACT. See 40 CFR 51.1105(a)(1); 51.1100(o). Pennsylvania is also required to implement certain RACT requirements statewide since the entirety of the state is in the OTR. CAA section 184(b). Thus, all of Pennsylvania remains subject to RACT requirements for both the 1997 8-hour ozone NAAQS and the 2008 8-hour ozone NAAQS.

#### B. Applicability of RACT Requirements in Pennsylvania

As indicated previously, RACT requirements apply to any ozone nonattainment areas classified as Moderate or higher (Serious, Severe, or Extreme) under CAA sections 182(b)(2). Pennsylvania has a number of areas that are designated nonattainment for the 2008 8-hour ozone

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<sup>5</sup> Additional guidance includes the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990 (1992 General Preamble), 57 FR 13498 (April 16, 1992), and the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990; Supplemental Appendices to the General Preamble, 57 FR 18070 (April 28, 1992). See also <https://www.epa.gov/ground-level-ozone-pollution/ract-information>.

NAAQS, including Allegheny and Armstrong Counties. Some areas are additionally required to implement RACT nonattainment requirements as anti-backsliding measures for the revoked 1997 8-hour NAAQS. Also, the entire Commonwealth of Pennsylvania is part of the OTR established under section 184 of the CAA and thus subject statewide to the RACT requirements of CAA sections 182(b)(2) and 182(f), pursuant to section 184(b). While RACT must be evaluated and satisfied as separate requirements under each applicable standard, in practice the same RACT requirements are applicable at this time in Pennsylvania for both the 1997 and 2008 8-hour ozone NAAQS.

States were required to make RACT SIP submissions for the 1997 8-hour ozone NAAQS by September 15, 2006. The Pennsylvania Department of Environmental Protection (PADEP) submitted a SIP revision on September 25, 2006, certifying that a number of previously approved VOC CTG and non-CTG major VOC RACT rules continued to satisfy RACT under the 1997 8-hour ozone NAAQS. EPA approved PADEP's September 25, 2006 submittal, so those requirements are not addressed in this action. See 82 FR 31464 (July 7, 2017). RACT control measures addressing all applicable CAA requirements under the 1997 8-hour ozone NAAQS have been implemented and fully approved in the jurisdictions of Allegheny County and Philadelphia County in Pennsylvania and are also not addressed here. See 78 FR 34584 (June 10, 2013) and 81 FR 69687 (October 7, 2016). For the 2008 8-hour ozone NAAQS, states were required to submit RACT SIP revisions by July 20, 2014.

#### C. Pennsylvania RACT Regulatory History, Legal Challenges and Partial Disapproval

On May 16, 2016, PADEP submitted a SIP revision addressing RACT under both the 1997 and 2008 8-hour ozone NAAQS in Pennsylvania. Specifically, the May 16, 2016 SIP submittal intended to satisfy sections 182(b)(2)(C), 182(f), and 184 of the CAA for both the 1997 and 2008 8-hour ozone NAAQS for Pennsylvania's major NO<sub>x</sub> and non-CTG major VOC sources, with a few exceptions not relevant to this action. PADEP's SIP revision included newly adopted regulations found at 25 Pennsylvania Code (Pa. Code) sections 129.96-129.100, titled



“Additional RACT Requirements for Major Sources of NO<sub>x</sub> and VOCs” (the RACT II Rule) and amendments to 25 Pa. Code section 121.1, including related definitions, to be incorporated into the Pennsylvania SIP. These regulatory amendments were adopted by PADEP on April 23, 2016, and became effective on the same date upon publication in the Pennsylvania Bulletin.

On May 9, 2019, EPA published a final action fully approving certain provisions of PADEP’s RACT II rule, and conditionally approving other provisions of the SIP revision. 84 FR 20274 (May 9, 2019). The Sierra Club commented on EPA’s proposed approval of the RACT II rule, and following EPA’s final approval, filed a petition for review with the U.S. Third Circuit Court of Appeals (Third Circuit). The petition challenged EPA’s approval of only that portion of the RACT II rule applicable to coal-fired EGUs equipped with SCR for control of NO<sub>x</sub>. Specifically, the petition challenged EPA’s approval of the presumptive RACT NO<sub>x</sub> limit for these EGUs of 0.12 pounds (lb) of NO<sub>x</sub> per one million British thermal units (MMBtu) of heat input (lb/MMBtu) when the inlet temperature to the SCR was 600 degrees Fahrenheit or above, found at 25 Pa. Code 129.97(g)(1)(viii); the application of the less stringent NO<sub>x</sub> limits of 25 Pa. Code 129.97(g)(1)(vi) to EGUs with SCR when the inlet temperature to the SCR was below 600 degrees Fahrenheit;<sup>6</sup> and the failure of the RACT II rule at 25 Pa. Code 129.100(d) to specifically require these EGUs to record temperature data for the inlet temperature to the SCRs and report that data to PADEP. At the time of EPA’s approval, there were six facilities in Pennsylvania which were subject to the portion of the RACT II rule which was relevant for purposes of the legal challenge: Bruce Mansfield Generating Station in Beaver County (Bruce Mansfield), Cheswick Generating Station in Allegheny County (Cheswick), Conemaugh Generating Station in Indiana County (Conemaugh), Homer City Generating Station in Indiana County (Homer City), Keystone Generating Station in Armstrong County (Keystone), and

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<sup>6</sup> 25 Pa Code 129.97(g)(1)(vi) applies to coal-fired combustion units with a heat input greater than 250 million MMBtu/hr that do not have SCR.

Montour Generating Station in Montour County (Montour). Subsequently, Bruce Mansfield ceased operations and surrendered their title V operating permit, and therefore is not included in this action. Additionally, Cheswick Generating Station was issued a title V modification which included an enforceable requirement to cease operations on or before April 1, 2022.<sup>7</sup> Because the process of closure is still ongoing during development of this proposed rulemaking action, EPA cannot affirmatively determine at this time that operations at Cheswick have permanently and enforceably ceased. Therefore, EPA is proposing RACT limits for Cheswick. If operations have permanently and enforceably ceased prior to a final rulemaking action, EPA will not finalize RACT limits for Cheswick.

On August 27, 2020, the Third Circuit Court of Appeals found for the Sierra Club on all three issues, vacated the Agency's approval of the SIP submission on each of these three pieces of the Pennsylvania plan as it pertained to coal-fired EGUs equipped with SCRs (which was applicable to the six facilities listed above), and remanded to the Agency.<sup>8</sup> *Sierra Club v. EPA*, 972 F.3d 290 (3<sup>rd</sup> Cir. 2020) (*Sierra Club*). The court held that EPA's approval of 25 Pa. Code 129.97(g)(1)(viii) was arbitrary and capricious because the record did not support EPA's finding that the emission rate limit of 0.12 lb/MMBtu was RACT for these EGU sources, particularly in light of submitted evidence that EGUs in Pennsylvania regulated by 25 Pa. Code 129.97(g)(1)(viii) had achieved much lower emission rates for NO<sub>x</sub> in the past, and that other states had adopted lower RACT NO<sub>x</sub> limits for coal-fired sources. *Sierra Club* at 299-303. In addition, the court held that EPA's approval of the less stringent limits (found in 25 Pa Code 129.97(g)(1)(vi)) when the inlet temperature fell below 600-degrees Fahrenheit was arbitrary and capricious because the record failed to support the need for that less stringent limit or explain why 600 degrees was chosen as the threshold for the change in limits. *Id.* at 303-307. Thus, the

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<sup>7</sup> Documentation for both closures is contained in the docket for this action.

<sup>8</sup> Those portions of the SIP which were not subject to challenge in litigation remain approved by EPA's May 2019 action.

court vacated EPA's approval of the 0.12 lb/MMBtu limit, and the 600-degree temperature threshold, both of which are only found in 25 Pa. Code 129.97(g)(1)(viii).<sup>9</sup> See *Id.* at 309.

Regarding the reporting and record keeping requirement of 25 Pa. Code 129.100(d), the court also found EPA's approval of the specific SIP revisions discussed above to be arbitrary and capricious based upon the lack of a specific record keeping and reporting requirement for the 600-degree inlet temperature alternative limits to the SCR. See *Id.* Specifically, the court held that "[b]ecause the SIP's 600-degree threshold necessarily depends upon accurate temperature reporting, the EPA's approval of such inadequate requirements on this record was arbitrary and capricious." *Id.* at 309. Lacking evidence in the record that more general recordkeeping and reporting requirements contained in the SIP would require sources subject to 25 Pa. Code 129.97(g)(1)(viii) to keep specific SCR temperature inlet data, report that data to PADEP, and make it available to the public, the court agreed with the Sierra Club. *Id.* at 308. Further, the court explained that "[t]he combination of this lack of mandatory reporting and the temperature waiver created a potent loophole for polluters to walk through." *Id.* at 297.

The court further stated that "[o]n remand, the agency must either approve a revised, compliant SIP within two years or formulate a new federal implementation plan." *Id.* at 309. On September 15, 2021, EPA proposed disapproval of those portions of the prior approval which were vacated by the Court. See 86 FR 51315. EPA proposed that action in part to ensure that we have authority to promulgate a FIP if Pennsylvania does not submit a timely approvable SIP revision addressing the Third Circuit's decision. EPA is now proposing this FIP to address these deficiencies, in accordance with the Court's directive, should it be necessary to finalize a FIP to

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<sup>9</sup> The court did not vacate 25 Pa Code 129.97(g)(1)(vi) generally. The court took issue with 25 Pa Code 129.97(g)(1)(vi) only as it was being applied to EGUs with SCR when the inlet temperature to the SCR was below 600 degrees Fahrenheit.

fulfill the Court's order.<sup>10</sup>

#### D. Pennsylvania's Efforts to Respond to the Court's Decision

PADEP undertook significant efforts to develop a SIP revision addressing the deficiencies identified by the Third Circuit in the *Sierra Club* decision. PADEP proceeded to develop source specific ("case-by-case") RACT determinations for the Cheswick, Conemaugh, Homer City, Keystone, and Montour generating stations. As mentioned above, the Bruce Mansfield facility ceased operation, so there is no longer a need to address that facility. By April 1, 2021, each of the five facilities had submitted permit applications to PADEP with alternative RACT proposals in accordance with 25 Pa. Code 129.99. There are a total of ten affected EGUs/units at the five facilities: three at Homer City, two each at Conemaugh, Keystone and Montour, and one at Cheswick. Subsequently, PADEP issued technical deficiency notices to obtain more information needed to support the facilities' proposed RACT determinations. Although additional information was provided in response to these notices, PADEP determined the proposals to be insufficient and began developing its own RACT determination for each facility. The outcome of this process was PADEP's issuance of draft permits for each facility, which were developed with the intention of submitting each case-by-case RACT permit to be incorporated as a federally enforceable revision to the Pennsylvania SIP. Each draft permit underwent a 30-day public comment period,<sup>11</sup> during which EPA provided source-specific comments to PADEP for each permit. The draft permits, technical support memos for each

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<sup>10</sup> EPA plans to finalize the September 15, 2021, proposed disapproval in the event we need to finalize this proposed FIP to meet the court-ordered deadline. The court-ordered deadline preempts the FIP timeline established by CAA section 110(c)(1) for a finalized disapproval. See 86 FR 51317. EPA may promulgate a FIP contemporaneously with or immediately following predicate final action on a SIP (or finding no SIP was submitted). In order to accomplish this, the EPA must necessarily be able to propose a FIP prior to taking final action to disapprove a SIP or make a finding of failure to submit. The Supreme Court recognized this in *EME Homer City* by stating "EPA is not obliged to wait two years or postpone its action even a single day: The Act empowers the Agency to promulgate a FIP 'at any time' within the two-year limit." *EPA v. EME Homer City Generation, L.P.*, 572 U.S. 489, 509 (2014) (citations omitted).

<sup>11</sup> See 51 Pa.B. 5834, September 11, 2021 (Keystone); 51 Pa.B. 6259, October 2, 2021 (Conemaugh); 51 Pa.B. 6558, October 16, 2021 (Homer City); 51 Pa.B. 6930, November 6, 2021 (Montour); Allegheny County Health Department Public Notices, December 2, 2021 (Cheswick).

permit drafted by PADEP, and EPA's comments on each draft permit are included in the docket for this proposed action. At this time, it is not known when, or if, PADEP will submit these permits to EPA as SIP revisions to address the Court's decision.

### **III. EPA's RACT Analysis and Proposed Emission Limits**

RACT is not defined in the CAA. However, as discussed above, EPA's longstanding definition of RACT is "the lowest emission limit that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility."<sup>12</sup> Pennsylvania has adopted a very similar definition of RACT as "[t]he lowest emission limit for VOCs or NO<sub>x</sub> that a particular source is capable of meeting by the application of control technology that is reasonably available considering technological and economic feasibility." 25 Pa. Code 121.1. The Third Circuit decision "assume[d] without deciding" that EPA's definition of RACT is correct. *Sierra Club* at 294. EPA is using its longstanding definition of RACT to determine the limits proposed in this FIP.

The collection of sources addressed by the RACT analysis in this proposed FIP has been determined by the scope of the Third Circuit's order in the *Sierra Club* case and EPA's subsequent proposed disapproval action.<sup>13</sup> Herein, EPA is proposing RACT control requirements for the five remaining facilities that were subject to the SIP provision which the Court vacated EPA's approval of and which EPA thereafter proposed to disapprove: Cheswick, Conemaugh, Homer City, Keystone, and Montour.

EPA is proposing that the RACT limits in this FIP will apply throughout the year. For reasons explained in the next section, the proposed limits are technologically and economically feasible during the entire year. While other regulatory controls for ozone, such as the Cross State

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<sup>12</sup> See Strelow Memo at 2.

<sup>13</sup> See 86 FR 51315 (September 15, 2021).

Air Pollution Rule (CSAPR) and its updates, may apply during a defined ozone season,<sup>14</sup> the proposed RACT limits do not authorize seasonal exemptions based on atmospheric conditions or other factors since the RACT emissions rates are technologically and economically feasible year-round. To the degree that the EPA analyses underlying the RACT emissions limits proposed here rely on past performance data, those calculations typically use ozone season data. This is because ozone season data generally represent the time period over which emissions rate performance of these units is the best. Put another way, the ozone season data for the facilities examined here are a reliable indicator of what is technologically and economically feasible for these facilities, and EPA has no reason to believe that achieving the same performance outside the ozone season would be technologically or economically infeasible.

#### A. Technologically Feasible NO<sub>x</sub> Controls for EGUs

EPA has previously identified several technologically feasible controls for reducing NO<sub>x</sub> from EGUs. NO<sub>x</sub> control technologies are typically divided into combustion controls and post-combustion controls. Combustion controls reduce the formation of NO<sub>x</sub> during the combustion of fuel, and include low-NO<sub>x</sub> burners (LNBs), over fire air (OFA), and natural gas reburn (NGR). Post-combustion controls “treat” NO<sub>x</sub> following its formation during combustion, and include Selective Non-Catalytic Reduction (SNCR) and SCR. EPA’s Alternative Control Techniques Document for NO<sub>x</sub> Emissions from Utility Boilers provides technical information for developing and implementing regulatory programs to control NO<sub>x</sub> emission from fossil fuel-fired boilers (EPA-453/R-94-023, 1994/03).<sup>15</sup> The EPA Air Pollution Control Cost Manual (Cost Manual) contains chapters with more recent information, including that for cost, for these

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<sup>14</sup> For example, the CSAPR and certain other regulations addressing interstate transport of ozone and its precursors apply during “ozone season,” which is defined for purposes of those regulations as the period from May 1 to September 30 of each year. See, e.g., 40 CFR 52.38(b)(1).

<sup>15</sup> For the EPA Alternative Control Techniques Document for NO<sub>x</sub> Emissions from Utility Boilers, see <https://nepis.epa.gov/Exe/ZyPDF.cgi?Dockey=2000INPN.txt>

post-combustion controls.<sup>16</sup> The technical support document (TSD) for the Revised CSAPR Update rule also explored several technologies for reducing NOx emissions from EGUs, including SCR and SNCR, and identified the likely cost of these controls.<sup>17</sup>

All ten of the EGUs at the five facilities at issue have been equipped with at least low NOx burners and overfire air since the 1990s, and with SCRs beginning in the early 2000s, with the exception of Conemaugh, which installed SCR in 2014. As such, low-NOx burners, overfire air, and SCR are clearly technologically feasible and proven technologies to reduce NOx for the EGUs at these facilities. The specific NOx and other pollutant controls on each EGU are discussed in the TSD for this action (See section B – Facility Details). Having determined that these technologies are technologically feasible, the question shifts to identifying, through the application of some or all of these technologies, what is the lowest NOx emission limitation at these EGUs reasonably available considering technological and economic feasibility.

Section 4 (“NOx Controls”), Chapter 2 (“Selective Catalytic Reduction”) of the Cost Manual contains a thorough description of how SCRs work and the multiple factors affecting the NOx removal efficiency (performance) of SCRs. The major operational and design factors that affect the NOx removal performance of SCRs include: reaction temperature range; residence time available in the optimum temperature range; degree of mixing between the injected reagent and the combustion gases; molar ratio of injected reagent to inlet NOx; inlet NOx concentration level; and ammonia slip. Additional factors affecting NOx removal efficiency of SCRs identified in the Cost Manual are: catalyst activity; catalyst selectivity; pressure drop across the catalyst; ash management (i.e., mitigating large particle ash (LPA) impacts on the catalyst) and

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<sup>16</sup> The Cost Manual can be found at <https://www.epa.gov/economic-and-cost-analysis-air-pollution-regulations/cost-reports-and-guidance-air-pollution>. Additionally, the relevant section of the manual is included in the docket for this action. As of this publication, there are no sections addressing combustion controls. However, a section addressing low NOx and Ultra low NOx burners is in development.

<sup>17</sup> For the TSD for the Revised CSAPR Update, see [https://www.epa.gov/sites/default/files/2021-03/documents/egu\\_nox\\_mitigation\\_strategies\\_final\\_rule\\_tsd.pdf](https://www.epa.gov/sites/default/files/2021-03/documents/egu_nox_mitigation_strategies_final_rule_tsd.pdf)

dust loading; catalyst pitch; sulfur dioxide (SO<sub>2</sub>) and sulfur trioxide (SO<sub>3</sub>) concentrations in gas stream; catalyst deactivation; and catalyst management.<sup>18</sup>

The temperature of the flue gas entering the SCR is a critical factor affecting the performance of any SCR. The temperature of the flue gas entering the SCR affects the degree (percentage) of NO<sub>x</sub> reduction the SCR is capable of achieving, the likelihood of creating unfavorable emissions from the SCR, such as ammonia slip, and the potential for damage or fouling of the SCR catalyst. As stated in the Cost Manual: “The NO<sub>x</sub> reduction reaction is effective only within a given temperature range. The use of a catalyst in the SCR process lowers the temperature range required to maximize the NO<sub>x</sub> reduction reaction. At temperatures below the specified range, the reaction kinetics decrease, and ammonia passes through the boiler (ammonia slip), but there is little effect on nitrous oxide (N<sub>2</sub>O) formation. At temperatures above the specified range, N<sub>2</sub>O formation increases and catalyst sintering and deactivation occurs, but little ammonia slip occurs.”<sup>19</sup> The Cost Manual also notes that “In an SCR system, the optimum temperature depends on both the type of catalyst used in the process and the flue gas composition. For the majority of commercial catalysts (metal oxides), the operating temperatures for the SCR process range from 480 to 800°F (250 to 430°C). ... [T]he rate of NO<sub>x</sub> removal increases with temperature up to a maximum between 700 and 750°F (370 to 400°C). As the temperature increases above 750°F (400°C), the reaction rate and resulting NO<sub>x</sub> removal efficiency begin to decrease.”<sup>20</sup>

Based in part on this language in the Cost Manual, EPA approved a 600-degree flue gas temperature threshold at which a 0.12 lb/MMBtu NO<sub>x</sub> rate applied in the Pennsylvania RACT II SIP. However, the Third Circuit found that both EPA’s and PADEP’s record lacked a

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<sup>18</sup> See subsection 2.2.2 of section 4, Chapter 2 of the Cost Manual.

<sup>19</sup> *Id.*

<sup>20</sup> *Id.*



reasonable explanation for why 600 degrees was specifically selected by PADEP as the SCR inlet flue gas temperature below which the higher NO<sub>x</sub> emission rate applied.<sup>21</sup>

As part of the approach used to develop the proposed rates for this action, EPA examined data related to the threshold at which these facilities can effectively operate their SCR. Since the date of the Third Circuit decision (August 27, 2020), EPA has obtained from PADEP a few redacted pages of the SCR Operator's Manual for Conemaugh and Keystone, as well as hourly flue gas temperature, reagent injection amounts, and NO<sub>x</sub> emission data for the years 2017 through 2020 for those same facilities. These were submitted in response to PADEP's technical deficiency letters and are included in the docket for this action. Conemaugh's SCR manual lists 611 degrees Fahrenheit as the minimum temperature for injecting reagent, while Keystone's manual says 612 degrees is the minimum continuous operating temperature for reagent injection, but reagent can be injected for up to 3 hours at temperatures between 582 and 611 degrees before the system automatically shuts off reagent injection. Because these two facilities provided only a few select pages of their SCR manuals, EPA cannot be certain whether there are, or are not, other operating scenarios and/or SCR inlet temperatures at which reagent could be injected. Furthermore, it is unclear whether the operating manual reflects a specific analysis of the injection protocol that would result in the greatest NO<sub>x</sub> reductions, as RACT requires. However, in comments submitted in response to the Ozone Transport Commission (OTC)'s CAA section 184(c) petition,<sup>22</sup> Conemaugh and Keystone also identified the threshold in Megawatts (MW) at which they could operate their respective SCRs (see Table 1).<sup>23</sup>

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<sup>21</sup> *Sierra Club* at 303–307.

<sup>22</sup> CAA section 184(a) establishes a commission for the OTR, the OTC, consisting of the Governor of each state or their designees, the Administrator or their designee, the Regional Administrators for the EPA regional offices affected (or the Administrator's designees), and an air pollution control official representing each state in the region, appointed by the Governor. Section 184(c) specifies a procedure for the OTC to develop recommendations for additional control measures to be applied within all or a part of the OTR if the OTC determines that such measures are necessary to bring any area in the OTR into attainment for ozone by the applicable attainment deadlines. On June 8, 2020, the OTC submitted a recommendation to EPA for additional control measures at certain coal-fired EGUs in Pennsylvania. See 85 FR 41972; July 13, 2020.

<sup>23</sup> See p. 17 of the comments, in the docket for the section 184(c) petition, found at <https://www.regulations.gov/comment/EPA-HQ-OAR-2020-0351-0022>.

PADEP also provided 30 days of similar data submitted by Montour, which included the inlet temperature and reagent injection amounts. Montour also provided an apparently complete copy of its SCR Operation and Maintenance Manual to PADEP, but this manual was not included in the information provided to EPA.

Absent more complete temperature data and operating manuals for all facilities, EPA then analyzed historical operating data submitted to EPA by each of these facilities in order to determine the operating threshold at which Cheswick, Montour, and Homer City could inject reagent and run their SCRs to develop the same MW measure for these three facilities as for Conemaugh and Keystone.<sup>24</sup> For Homer City, Montour, and Cheswick, EPA looked at hourly data for these sources in EPA's Power Sector Emissions Data for ozone seasons 2002 through 2020, except for any years when the source did not have SCR installed.<sup>25</sup> (See explanation in the introduction to this section for why these analyses use ozone season data) EPA created scatter plots showing hourly NO<sub>x</sub> emission rates by gross hourly load (MW/hr) for each unit's three best performing ozone seasons (in terms of overall ozone season average rate), as well as data from its two most recent ozone seasons (which was 2019 and 2020 at the time).<sup>26</sup> From these scatter plots, the SCR threshold was approximated through visual inspection, i.e., by identifying each unit's approximate gross load, above each unit's minimum operating load, at which NO<sub>x</sub> rates below 0.2 lb/MMBtu were achieved in the years analyzed. The full analysis and methodology are discussed in detail in the TSD. The results of this analysis, as well as the reported values for Conemaugh and Keystone, are shown in Table 1 in this preamble.

**Table 1: Observed SCR Thresholds**

Facility Name	Unit	SCR Threshold (MW)
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<sup>24</sup> Conemaugh and Keystone submitted data in response to the OTC's CAA section 184(c) petition identifying the MW input at which it typically operates or can operate the SCRs. EPA reviewed the historic operating data for these facilities as it did for Homer City, Montour, and Cheswick, and found that Keystone and Conemaugh's stated thresholds were consistent with the data. EPA thus relied upon the stated values for Keystone and Conemaugh in the development of this action's proposed rates.

<sup>25</sup> <https://www.epa.gov/airmarkets/power-sector-emissions-data>

<sup>26</sup> See Appendix 5 of the TSD for this action.

Conemaugh	1	450
Conemaugh	2	450
Keystone	1	660
Keystone	2	660
Homer City	1	320
Homer City	2	320
Homer City	3	320
Montour	1	380
Montour	2	380
Cheswick	1	290

Given the role of gas temperature in SCR performance, EPA considered how best to use this information in establishing RACT limits that address the Third Circuit’s concerns about allowing less stringent limits when flue gas temperatures went below what it considered to be an arbitrary temperature threshold. This is a challenging factor to consider in cases when the operating temperature varies, and when the units spend some time at temperatures where SCR is very effective, and some time at temperatures where it is not. To assess whether the units in this FIP exhibit this pattern, EPA evaluated years of data submitted by these sources to EPA to characterize their variability in hours of operation or level of operation.<sup>27</sup> In particular, EPA used this information to identify whether, or to what degree, the EGUs have shifted from being “baseload” units (*i.e.*, a steady-state heat input rate generally within SCR optimal temperature range) to “cycling” units (*i.e.*, variable heat input rates, possibly including periods below the SCR optimal temperature range). All of these EGUs were designed and built as baseload units, meaning the boilers were designed to be operated at levels of heat input near their design capacity 24 hours per day, seven days per week, for much of the year. As a result, the SCRs installed in the early 2000s were designed and built to work in tandem with a baseload boiler. In particular, the SCR catalyst and the reagent injection controls were designed for the consistently higher flue gas temperatures created by baseload boiler operation. In more recent years, for multiple reasons, these old, coal-fired baseload units have struggled to remain competitive when

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<sup>27</sup> See the Excel spreadsheet entitled “PA-MD-DE SCR unit data 2002-2020.xlsx” in the docket for this action.

bidding into the PJM Interconnection (PJM) electricity market.<sup>28</sup> Nationally, total electric generation has generally remained consistent, but between 2010 and 2020, generation at coal-fired utilities has declined by 68%.<sup>29</sup> As a result, many of these units, on a daily basis, more recently have tended to cycle between high heat inputs, when electricity demand is high, and lower heat inputs or complete shutdowns, when demand is low. This cycling behavior can affect the ability of the EGUs to operate their SCRs because at lower heat inputs the temperature of the flue gas can drop below the operating temperature for which the SCR was designed.<sup>30</sup> Accordingly, this proposal seeks to establish limits that account for the technical limits on SCR operation that can result from this cycling behavior.

As alluded to above, PADEP attempted to address this cycling behavior by creating tiered emissions limits for different modes of operation based on the flue gas temperature, which its RACT II rule expressed as a transition from the 0.12 lb/MMBtu rate to much less stringent rates (between 0.35 and 0.4 lb/MMBtu, depending on the type of boiler) based on a temperature cutoff of 600 degrees, with the less stringent rate essentially representing a “no-SCR” mode (i.e., an emission limit applicable at times when the SCR has been idled or bypassed and is not actively removing NO<sub>x</sub>). The Third Circuit rejected this approach because the selection of the cutoff temperature was not sufficiently supported by the record.<sup>31</sup> The Third Circuit decision also questioned the need for a the less stringent rate, noting that nearby states do not have different emission rates based on inlet temperatures.<sup>32</sup>

EPA has considered the Court’s concerns and has further considered the practical and policy implications in structuring a tiered limit for these cycling EGUs based on operating

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<sup>28</sup> PJM is a regional transmission organization (RTO) or grid operator which provides wholesale electricity throughout 13 states and the District of Columbia.

<sup>29</sup> U.S. Energy Information Administration, “Electric Power Annual 2020,” Table 3.1.A. Net Generation by Energy Source, <https://www.eia.gov/electricity/annual/>

<sup>30</sup> U.S. EPA, “EPA Alternative Control Techniques Document for NO<sub>x</sub> Emissions from Utility Boilers” EPA-453/R-94-023, March 1994, p. 5-119, <https://nepis.epa.gov/Exec/QueryPDF.cgi?Dockey=2000INPN.txt>

<sup>31</sup> See *Sierra Club* at 303-307.

<sup>32</sup> *Id.* at 303.

temperature. As such, EPA has decided against proposing a tiered limit. The effectiveness of SCR does not drop to zero at a single temperature point and defining the minimum reasonable temperature range to begin reducing SCR operation for the purposes of creating an enforceable RACT limit is a highly technical, unit-specific determination that depends on several varying factors. EPA expects that defining a specific mode where SCR cannot or should not operate would be exceedingly complex and require information that EPA does not have, showing, for each unit, complete information on all the effects of varying temperature levels on SCR operation and emissions control performance. Such a tiered limit would also require extensive recordkeeping of the source's relevant operating parameters that form the basis of the tiers in order to be enforceable, as the Court noted in its ruling regarding the need to keep detailed temperature records.

EPA has an additional concern about addressing cycling operation through a tiered RACT limit based on operating temperature. It is reasonable to expect that, to the degree that the heat input of sources during cycling mode is under source control, the creation of a tiered limit that allows no-SCR operation at certain inlet temperatures would create an incentive for the source to cycle to temperatures where SCR is not required, in order to avoid SCR operating costs and potentially gain a competitive advantage. In the case of the Pennsylvania limits addressed by the Third Circuit's decision, there was no limit on how much time the units could spend in no-SCR mode. In section C of the TSD for this action, EPA shows that over the last decade, some affected sources have varied the gross load level to which they cycle down, hovering either just above or just below the threshold at which the SCR can likely operate effectively.

Depending on the unit, this slight change in electricity output could significantly affect SCR operation and the resulting emissions output. Though instances of cycling below SCR thresholds occurred in some cases prior to the implementation of Pennsylvania's tiered RACT limit and thus the limit may not be the sole driver of the behavior following its implementation, the limit certainly allows this behavior to occur. While EPA acknowledges the need for EGUs to

operate at times in modes where SCR cannot operate, EPA believes its RACT limit should minimize incentives to do that, and a tiered rate structure that effectively has no limit on no-SCR operation tends to do the opposite.

On the other hand, EPA is also concerned about a RACT limit that treats these EGUs as always operating as baseload units by imposing a NO<sub>x</sub> emission rate that applies at all times but can technically be achieved only if the boiler is operating at high loads. Recent data indicates that these units are not operating as baseload units and are not likely to do so in the future.<sup>33</sup> Selecting the best baseload rate (the rate reflecting SCR operation in the optimal temperature range) and applying that rate at all times does not account for, and could essentially prohibit, some cycling operation of these units. Cycling has become more common at coal-fired EGUs because they are increasingly outcompeted for baseload power. In the past, these units were among the cheapest sources of electricity and would often run close to maximum capacity. Over time, other EGUs can now generate electricity at lower costs than the coal-fired units. Thus, the coal-fired units now cycle to lower loads during hours with relatively low system demand (often overnight and especially during the spring and fall “shoulder” seasons when space heating and cooling demand is minimized) when their power is more expensive than the marginal supply to meet lower load levels. Hence, they cycle up and down as load, and demand-driven power prices, rise and fall and they operate when the price meets or exceeds their cost to supply power. EPA acknowledges that cycling down to a no-SCR mode may sometimes happen, for example, when electricity demand drops unexpectedly, and other units provide the power at a lower cost. The consideration of the technical and economic feasibility of a given RACT limit should reflect, to the extent possible, consideration of the past, current, and future expected operating environment of a given unit. EPA seeks comment on how best to consider these feasibility issues to establish a rate for each unit that would reflect a reasonable level of load-following

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<sup>33</sup> See section C of the TSD for this action.

(cycling) (*e.g.*, a level consistent with similar SCR-equipped units) but that also accounts for the lower historic NO<sub>x</sub> rates that these units have achieved.

## B. Weighted Rates Approach and Analysis

Given these concerns, EPA is proposing to express the RACT limits for these units using a weighted rate limit. The weighted rate incorporates both a lower “SCR-on” limit and a higher “SCR-off” limit. Through assignment of weights to these two limits based on the proportion of operation in SCR-on and SCR-off modes during a period of operation that represents a reasonably low amount of SCR-off operation, the SCR-on and SCR-off limits are combined into a single RACT limit that applies at all times. The weight given to the proposed SCR-off limit (established as described later in this section) has the effect of limiting the portion of time a cycling source can operate in SCR-off mode and incentivizes a source to shift to SCR-on mode to preserve headroom under the limit. While driving SCR operation, the weighted limit accommodates the need for an EGU to occasionally cycle down to loads below which SCR can operate effectively and does not prohibit no-SCR operation or dictate specific times when it must occur. In this way, the proposed approach avoids the difficulty of precisely establishing the minimum temperature point at which the no-SCR mode is triggered, effectively acknowledging the more gradual nature of the transition between modes where SCR is or is not effective. Finally, it is readily enforceable through existing Continuous Emission Monitoring Systems (CEMS), without the need for development of recordkeeping for additional parameters that define the SCR-off mode. The approach is described in more detail below.

As a starting point for developing the weighted rates for each unit, EPA calculated both “SCR-on” and “SCR-off” rates using historic ozone season operating data for the unit to determine when the SCR was likely running and when it was likely not running, and then established rates that represent the lowest emission limit that is reasonably available considering economic and technological feasibility. Using the EPA (or source) derived minimum SCR operation threshold as described in section III.A in this preamble, expressed as Megawatts (MW)

in Table 1 in this preamble, EPA calculated average “SCR-on” and “SCR-off” rates for each unit based on historic operating data for that unit, when available, from 2003 to 2021. For detail on the development of these rates, see section D of the TSD for this action. The “SCR-on” rate is an average of all hours in which the SCR was likely running (operating above the threshold at which it can run the SCR with an hourly NO<sub>x</sub> emission rate below 0.2 lb/MMBtu) during each unit’s third best ozone season from the period 2003 to 2021. The third best ozone season was identified based on the unit’s overall average NO<sub>x</sub> emission rate during each ozone season from 2003 to 2021. This 18-year time period captures all the years of SCR operation for each facility, with the exception of Conemaugh, which only installed SCR in 2014.<sup>34</sup> EPA included all these years of data because the Third Circuit’s decision questioned EPA’s review of only certain years of emissions data for these sources in determining whether to approve Pennsylvania’s RACT II NO<sub>x</sub> emission rate for these EGUs. The use of the 3rd-best year accounts for degradation of control equipment over time. EPA used a third best ozone season approach for the Revised CSAPR Update (86 FR 23054, April 30, 2021) and the proposed Good Neighbor Plan for 2015 Ozone NAAQS (87 FR 20036, April 6, 2022) (2015 Good Neighbor Plan). The “SCR-off rate” is an average of all hours in which the unit’s SCR was likely not running (operating below the threshold at which it can run the SCR with an hourly NO<sub>x</sub> rate above 0.2 lb/MMBtu) during all ozone seasons from 2003-2021. All ozone seasons in the time period were used to increase the sample size of this subset of the data, as an individual ozone season likely contains significantly fewer data points of non-SCR operation.

Using the thresholds listed in Table 1 in this preamble, EPA then calculated the SCR-on and SCR-off “weights,” which represent the amount of heat input spent above (SCR-on) or

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<sup>34</sup> Because the facility installed SCR in late 2014, the only ozone seasons available to analyze Conemaugh’s operation with SCR are 2015-2021. In addition, Conemaugh’s average ozone season NO<sub>x</sub> rates vary significantly over this time period. Given the relative newness of Conemaugh’s SCRs, and the fewer number of years of data and the wide variation in rates in those years, EPA decided that the second-best ozone season represents reasonable SCR performance for Conemaugh.



below (SCR-off) the SCR threshold, for each EGU. For the weights, EPA evaluated data from the 2011 to 2021 ozone seasons and selected the year in which the EGU had its third highest proportion of heat input spent above the SCR threshold during this time period, using that year's weight (the "third best weight") together with the SCR-on/SCR-off rates described previously to calculate the weighted rate. The years 2011-2021 were analyzed because they likely are representative of the time period that encompasses the years when the units began to exhibit a greater cycling pattern, and it is reasonable to expect that this pattern will continue for the foreseeable future.

Using these data, EPA is proposing emissions limitations based on the following equation:

$$(\text{"SCR-on" weight} * \text{"SCR-on" mean rate}) + (\text{"SCR off" weight} * \text{"SCR off" mean rate}) = \text{emissions limit in lb/MMBtu.}$$

The calculation for each limit is based on the third best weight for each unit over the 2011 to 2021 time period. Using the third best weight will eliminate the weights that represent years with the most frequent "no-SCR" cycling, especially the years in which cycling to just below the SCR threshold became more prevalent, in order to act as a limit on the potential for excessive no-SCR operation and incentivize SCR use. At the same time, using the third best weight will also minimize the weights that represent periods when minimal cycling was occurring (i.e., baseload operation), in order to ensure that the limit is not forcing cycling to be infeasibly constrained. The third best weight is therefore consistent with the RACT requirement: it represents the lowest rate reflecting SCR application, taking both reasonable technological and economic feasibility into account.

### C. Proposed NOx Emission Rate Limits

Table 2 in this preamble presents the proposed NOx Emission RACT rate limits for each facility that result from the application of the weighted approach. Table 2 in this preamble also presents the range of rates that would be generated using minimum (i.e., more baseload) and

maximum (*i.e.*, more cycling) weights over the period. EPA is taking comment on its proposed limits, and is also soliciting comment on all the values in this range as potential alternatives. More details about the weighted rates analysis can be found in section D of the TSD for this action.

**Table 2: Proposed NOx Emission Rate Limits**

Facility Name	Unit	Low Range Rate (lb/MMBtu)	High Range Rate (lb/MMBtu)	Weighted Rate (lb/MMBtu)	Proposed Facility-wide 30-day Average Rate Limit (lb/MMBtu)
Cheswick	1	0.085	0.195	0.099	0.099
Conemaugh	1	0.071	0.132	0.091	0.091
Conemaugh	2	0.070	0.132	0.094	
Homer City	1	0.102	0.190	0.102	0.088
Homer City	2	0.088	0.126	0.088	
Homer City	3	0.096	0.136	0.097	
Keystone	1	0.046	0.170	0.076	0.074
Keystone	2	0.045	0.172	0.074	
Montour	1	0.047	0.131	0.069	0.069
Montour	2	0.048	0.145	0.070	

The resulting NOx emission rate limits will be based on a 30-day rolling average, and will apply at all times, including during operations when exhaust temperatures are too low for the SCR to operate, or operate optimally. For facilities with more than one unit, the proposed limit will allow facility-wide averaging for compliance, but the average limit will be based on the weighted rate achieved by the best performing unit. Using the best performing unit as the basis for RACT is appropriate, as it would prioritize increased utilization of the best performing units in SCR-on mode. EPA is proposing a 30-operating day, rolling average for this rate-based (*i.e.*, lb/MMBtu) limit. EPA and many states have used such 30-day average limits for this type of limit, where the measured daily lb/MMBtu rate can vary significantly depending on the way the boilers and SCRs are operated in a day, but the limit is designed to apply at all times. A 30-day average “smooths” this variability by averaging the current value with the prior values over a rolling 30-day period to determine compliance. While some period of lb/MMBtu values over the

target rate can occur without triggering a violation, they must be offset by corresponding periods where the lb/MMBtu rate is lower than the target rate (*i.e.*, the 30-day rolling average rate). Such averaging periods have precedent not only in Federal rulemaking,<sup>35</sup> but in EPA's approval of SIPs.<sup>36</sup> Such a limit can represent RACT so long as it is based on 30-day periods that represent the lowest rate the source is capable of meeting over such period through the application of control technology that is reasonably available considering technological and economic feasibility. When EPA previously provided presumptive RACT limits for coal-fired EGUs, it expressed them as 30-day averages.<sup>37</sup> A 30-day average is similarly appropriate here, as the proposed rate limits here would apply at all times, throughout the year, to units that are expected to exhibit cycling operation as described previously. While there may be periods (typically when cycling down to where the SCR cannot operate effectively) where the lb/MMBtu rate is exceeded, these periods are limited in time by the weighted rate, and must be offset by periods where the lb/MMBtu rate is correspondingly lower to meet 30-day average limit.

#### D. Proposed Daily NO<sub>x</sub> Mass Emission Limits

EPA is also proposing a unit-specific daily NO<sub>x</sub> mass emission limit (*i.e.*, lb/day) to complement the weighted facility-wide 30-day NO<sub>x</sub> emission rate limit and further ensure RACT is applied continuously. High emissions days are a concern, given the 8-hour averaging time of the underlying 1997 and 2008 ozone NAAQS. This proposed daily NO<sub>x</sub> mass emission limit was calculated by multiplying the proposed facility-wide 30-day rolling average NO<sub>x</sub> emission limit (in lb/MMBtu) by each unit's heat input maximum permitted rate capacity (in MMBtu/hr) by 24 hours. While the 30-day average rate limit ensures that SCR is operated where feasible while reasonably accounting for cycling, EPA is concerned that units meeting this

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<sup>35</sup> See Coal-fired EGU new source performance standards (NSPS); 40 CFR 60.44.

<sup>36</sup> EPA has approved 30-day rolling averages as "short-term" RACT limitations in SIP revisions submitted by New York and Wisconsin. See 75 FR 64155 (October 19, 2010) for Wisconsin and 78 FR 41846 (July 12, 2013) for New York.

<sup>37</sup> See "State Implementation Plans; Nitrogen Oxides Supplement to the General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990" at 57 FR 55625 (November 25, 1992).

limit might still occasionally have higher daily mass emissions on one or more days where no or limited SCR operation occurs, which could trigger exceedances of the ozone NAAQS if these high mass emissions occur on days conducive to ozone formation, such as especially hot summer days. Notably, the OTC also raised the issue of daily emission limits in its CAA section 184(c) petition.

For example, in PADEP's "Technical Evaluation for Case-by-Case RACT, Conemaugh Generating Station," the performance of Conemaugh Unit 1 during the month of April 2020 was evaluated. PADEP determined that for most of the month, the unit ran at approximately 75% heat capacity, yet no reagent was injected on most days. Daily NO<sub>x</sub> mass emissions were predictably high. For example, on April 2, 2020, Unit 1 ran at roughly 75% heat capacity for about 20 out of the 24 hours. The NO<sub>x</sub> emissions rate over that period was roughly 0.275 lb/MMBtu.<sup>38</sup> Twenty hours at 75% heat capacity at 0.275 lb/MMBtu results in approximately 34,000 lbs of NO<sub>x</sub> emitted. In contrast, twenty hours at 75% heat capacity at the proposed 0.091 lb/MMBtu weighted rate would result in much less NO<sub>x</sub> being emitted: approximately 11,260 lbs. The addition of a unit-specific daily mass emission limit at an appropriate level will address concerns that a facility-wide 30-day average emission rate, by itself, may not curtail certain days where higher emission rates result in higher mass emissions of NO<sub>x</sub>. These foregone emissions reductions could have serious NAAQS implications on days where high ozone levels are likely to occur. A properly operating SCR can reduce NO<sub>x</sub> emissions by between 50% to 90%. For example, looking at the same Conemaugh Unit 1 data on a different day, September 30, 2017, the unit operated around 50% load for the entire day, but the facility apparently elected to operate the SCR since the NO<sub>x</sub> emission rate for that day was 0.05 lb/MMBtu, which is 82% lower than the April 2, 2020, NO<sub>x</sub> rate.

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<sup>38</sup> See "Technical Evaluation for Case-by-Case RACT, Conemaugh Generating Station" at 7.

For these reasons, EPA believes it is reasonable to propose an additional unit-specific lb/day mass limit as an additional safeguard. The proposed daily mass limit would be an additional constraint on no-SCR operation within a single day. It provides for some boiler operation without using the SCR, which may be unavoidable during part of any given day, but it constrains such operation because the mass limit will necessitate SCR operation (for example by raising heat input to a level where the SCR can operate) if the unit is to continue to operate while remaining below this limit. This provides greater consistency with the RACT definition. Table 3 in this preamble shows the proposed unit-specific NO<sub>x</sub> mass limits, which are to be met on a 24-hr basis.

**Table 3: Proposed NO<sub>x</sub> Mass Limits**

<b>Facility Name</b>	<b>Unit</b>	<b>Permitted Max Hourly Heat Input Rate (MMBtu/hr)<sup>39</sup></b>	<b>Proposed Unit-Specific Mass Limit (lb/day)</b>
Cheswick	1	6,000	14,256
Conemaugh	1	8,280	18,084
Conemaugh	2	8,280	18,084
Homer City	1	6,792	14,345
Homer City	2	6,792	14,345
Homer City	3	7,260	15,333
Keystone	1	8,717	15,481
Keystone	2	8,717	15,481
Montour	1	7,317	12,117
Montour	2	7,239	11,988

Table 4 in this preamble shows the reductions these proposed limits would realize when compared to 2021 emissions data.

**Table 4: 2021 Annual NO<sub>x</sub> Emissions and Rates Compared to Proposed Rates**

<b>Facility</b>	<b>2021 Average NO<sub>x</sub> Rate (lb/MMBtu)</b>	<b>Proposed 30-Day NO<sub>x</sub> Rate (lb/MMBtu)</b>	<b>Proposed Rate vs. 2021 Average</b>	<b>2021 NO<sub>x</sub> Emissions (tons)</b>	<b>Potential Change in NO<sub>x</sub> Mass Emissions (tons)</b>
Cheswick	0.139	0.099	-29%	1,069	-309

<sup>39</sup> Title V Permit maximum heat input rates.

Conemaugh	0.149	0.091	-39%	5,506	-2,132	
Homer City	0.133	0.088	-34%	3,144	-1,060	
Keystone	0.142	0.074	-48%	5,481	-2,618	
Montour	0.110	0.069	-37%	649	-241	
<b>Net:</b>				<b>15,850</b>	<b>-6,361</b>	<b>-40%</b>

#### E. Technological and Economic Feasibility of EPA's Proposed RACT Limits

EPA is proposing to determine that the limits discussed in the prior section are technologically feasible, in part because the limits have been met by each of the facilities affected by the proposed FIP. During the process of reviewing PADEP's proposed source specific permits, EPA evaluated past performance of the units in question, as shown in Appendix 1 of the TSD for this action. EPA looked at data from the best and third-best ozone seasons (second best for Conemaugh) over its entire record of operation with SCR, as well as data from just recent ozone seasons (2010-2020), with 2019 shown individually. For each of those time periods, EPA calculated the best daily average, the mean daily average, and the 99th percentile of daily average NOx emissions.

As previously discussed, RACT is not the lowest rate achievable by a particular source (or source category). Nor, as the Third Circuit pointed out, are RACT requirements satisfied by a limit that represents "...an average of the current emissions being generated by existing systems." *Sierra Club* at 14-15. Rather, as previously discussed, RACT is the lowest emission limit that a particular source is capable of meeting by the application of the control technology that is reasonably available considering technological and economic feasibility. By considering historical data that represent the best performing years, as well as more recent years where the changing realities of electrical generation have presented legitimate technological challenges to meeting those best rates, EPA's weighted rate approach is reasonable, and consistent with the CAA's RACT requirements. It represents a considerable improvement over the status quo, and still allows these sources the flexibility to address fluctuating power demands from the grid operator, so long as operation without SCR is reasonably constrained.

Economic feasibility in the context of RACT is not a “bright-line” or “one-size-fits-all” test with a clearly established threshold between what is and what is not economically feasible. Rather, it involves a case-by-case evaluation, and “...is largely determined by evidence that other sources in a source category have in fact applied the control technology in question.”<sup>40</sup> In the case of these five facilities, because the controls are already installed (no costs to install or retrofit control equipment), the economic analysis partially involves comparing the emissions limitations achieved by similar sources which operate under similar electrical dispatch constraints, as well as considering the extent to which all of these units have in fact demonstrated an ability to meet the proposed limits in the past. As discussed in more detail below, EPA’s cost analysis was consistent with the national, fleetwide approach applied in the context of the CSAPR rulemakings, and the 2015 Good Neighbor Plan. Additionally, EPA has made clear that economic feasibility should not be conflated with affordability: “Economic feasibility rests very little on the ability of a particular source to ‘afford’ to reduce emissions to the level of similar sources. Less efficient sources would be rewarded by having to bear lower emission reduction costs if affordability were given high consideration.”<sup>41</sup>

Furthermore, EPA reviewed operating and emissions data of EGUs in neighboring states which are also contractually obligated to the PJM Interconnection and found that there was nothing unique about the operating patterns of the units in Pennsylvania. EPA performed an analysis comparing certain data for each of the Pennsylvania SCR-equipped EGUs to data for the remaining SCR-equipped coal-fired EGUs in Maryland (Brandon Shores 1,2, Morgantown 1,2, and Wagner 3) and Delaware (Indian River 4). The data were compiled into a spreadsheet which

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<sup>40</sup> See “State Implementation Plans; General Preamble for the Implementation of Title I of the Clean Air Act Amendments of 1990; Supplemental;” April 28, 1992; 57 FR 18074. See also 44 FR 53761 (September 17, 1979) (supplement to the general preamble on RACT) and EPA Memorandum titled “Criteria for Determining RACT in Region IV” dated June 19, 1985 ([https://www.epa.gov/sites/default/files/2016-08/documents/criteria\\_for\\_determining\\_ract\\_in\\_region\\_iv\\_6-19-85.pdf](https://www.epa.gov/sites/default/files/2016-08/documents/criteria_for_determining_ract_in_region_iv_6-19-85.pdf)).

<sup>41</sup> *Id.*

is included in the docket for this action.<sup>42</sup> The data cover the period from 2000 through 2020.

The spreadsheet looks at the extent to which changes in units' average ozone season NOx emission rates over time can be explained by changes in their ozone season operating patterns – i.e., operating fewer hours and spending a larger fraction of the remaining operating hours at lower load levels.

EPA identified a multi-year baseline period after installation of each analyzed unit's SCR when operation of the unit seemed fairly stable and the NOx emission rate showed fairly consistent SCR optimization. These periods vary by unit and range from 2 years to 9 years across parts of the 2001-2013 time period. For each unit, EPA then compared the averages of the unit's seasonal average NOx emission rate, seasonal total operating hours, and seasonal average load level per operating hour during the baseline period to the same unit's averages across the 2017-2019 period. EPA did not identify a baseline period or perform the same specific comparisons for Conemaugh units 1 and 2 because these units' SCRs were not installed until 2015. The comparisons support several observations:

- Except for Keystone 1-2, all the units in all three states have experienced moderate to very large decreases in seasonal total operating hours – from 19% to 74%. By comparison, Keystone 1 and 2's operating hours decreased only 3% and 7%. (Conemaugh's pattern of changes in operating hours is similar to Keystone's).
- Except for Keystone 1 and 2 and Conemaugh 1 and 2, all the units in Pennsylvania and Maryland have also experienced moderate to large decreases in seasonal average load levels per operating hour – from 20% to 37%. By comparison, Keystone 1 and 2's average load levels per operating hour decreased only 6% and 9%. (Conemaugh's pattern of changes is similar to Keystone's, and Indian River 4 had a 10% decrease).

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<sup>42</sup> See "PA-MD-DE SCR unit data 2000-2020.xlsx"



- Except for Homer City 3 (and Conemaugh 1 and 2), all the Pennsylvania units experienced large increases in seasonal average NOx emission rates from the baseline period to the 2017-2019 period – from 59% to 130%. Comparison to the Maryland units calls into question whether these emission rate increases can reasonably be attributed to changes in either the units’ total operating hours or the units’ average load levels per operating hour, because the Maryland units – which had changes in both of these variables much larger than Keystone 1 and 2 and comparable to the other Pennsylvania units – all experienced decreases in average emission rates from -6% to -25% (Indian River 4 experienced an emission rate increase of 21%, but stayed below 0.085 lb/MMBtu, and Homer City 3 experienced an emission rate decrease of -2%).).

In summary, the comparisons show that all five Maryland units (and to a lesser extent the one Delaware unit) have experienced comparable or greater changes in total operating hours and average load levels per operating hour over time than the Pennsylvania units without a deterioration in NOx emission rates comparable to the deterioration shown by most of the Pennsylvania units.<sup>43</sup>

#### F. Increased Injection of Reagent and Increased Use of SCRs

Fixed operation and maintenance (FOM) costs, such as operator salaries, are independent of the operation of the control system and are incurred by the operator regardless of variations in control utilization. Variable operation and maintenance (VOM) costs are proportional to the quantity of waste gas processed by the control system. Because the SCRs at each EGU have already been installed and have been operated for years (albeit in a less than optimal fashion), FOM costs for the SCRs have already been incurred. Therefore, the economic feasibility analysis for this proposal need only consider the VOM costs associated with increased use of the

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<sup>43</sup> EPA also notes that the cost of NOx allowances under the various trading programs varied widely. See “Allowance Price Data All.xlsx” in the docket for this action.

SCRs. The most significant of these costs is the cost of the additional reagent needed to meet the proposed NO<sub>x</sub> limits and the additional cost of more frequent catalyst replacement and maintenance that might occur from greater use of the SCRs (compared to the status quo) to meet the lower proposed NO<sub>x</sub> limit. EPA has recently evaluated VOM costs associated with increased use of SCRs in a number of national rulemaking actions related to the CAA's interstate transport requirements, including most recently the proposed 2015 Good Neighbor Plan. In the "EGU NO<sub>x</sub> Mitigation Strategies Proposed Rule TSD" (2015 Good Neighbor Plan TSD) for the proposed rulemaking (included in the docket for this action), EPA used the capital expenses, and operation and maintenance costs for installing and fully operating emission controls based on the cost equations used within the Integrated Planning Model (IPM) that were researched by Sargent & Lundy, a nationally recognized architect/engineering firm with EGU sector expertise. From this research, EPA created a publicly available Excel-based tool called the Retrofit Cost Analyzer (Update 1-26-2022) (Retrofit Cost Analyzer) that implements these cost equations.<sup>44</sup>

In the TSD for the 2015 Good Neighbor Plan, EPA used the Retrofit Cost Analyzer to estimate the cost of additional reagent, as well as additional VOM costs, including catalyst replacement and disposal. Based on those calculations EPA estimated a representative marginal cost of optimizing SCR controls to be approximately \$1,600 per ton, consistent with its estimation in the Revised CSAPR Update for this technology. Additionally, depending on a unit's control operating status, the representative cost at the 90th percentile unit (among the relevant fleet of coal units with SCR covered in this rulemaking) ranges between \$900 and \$1,700 per ton. EPA evaluated all coal-fired units with SCR and determined that for those units with SCRs that are already partially operating, the cost of optimizing is often much lower than \$1,600 per ton and is often under \$900 per ton. (87 FR 20077; April 6, 2022).

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<sup>44</sup> See <https://www.epa.gov/airmarkets/retrofit-cost-analyzer> for the "Retrofit Cost Analyzer (Update 1-26-2022)" Excel tool.

EPA notes that while there is not a direct, one-to-one correlation, the cost of reagents is impacted directly by fluctuations in agricultural fertilizer markets. Fertilizer costs have risen considerably since this analysis was performed. In March of 2022, the cost of anhydrous ammonia was listed at roughly \$1500/ton, and urea at roughly \$900/ton.<sup>45</sup> The analysis performed for the 2015 Good Neighbor Plan to arrive at a reagent cost of \$500/ton involved calculations using the cost of urea.<sup>46</sup> However, all of the sources covered by this proposed FIP currently use ammonia for reagent injection.

Using the proposed NOx limits and associated predicted NOx reductions in Table 4 in this preamble, and the assumption from the 2015 Good Neighbor Plan TSD<sup>47</sup> that the chemical reaction requires 0.57 tons of ammonia for each ton of NOx reduced, we calculated an updated \$/ton of NOx removed using current (March 2022)<sup>48</sup> ammonia costs for the five facilities:

**Table 5: Cost per NOx (\$/ton) Removed Based on Additional Reagent**

<b>Facility</b>	<b>Predicted Reduction (tons NOx per year from 2021 baseline)</b>	<b>Additional Reagent (tons per year from 2021 baseline)*</b>	<b>Total Annual Cost for additional reagent^</b>	<b>Cost per ton of NOx removed for additional reagent (\$/ton)^+</b>
Cheswick	309	176	\$264,000	\$854
Conemaugh	2,132	1,215	\$1,822,500	\$855
Homer City	1,060	604	\$906,000	\$855
Keystone	2,618	1,492	\$2,238,000	\$855
Montour	241	137	\$205,000	\$853
<b>Average cost/ton</b>				<b>\$854</b>

\* Additional reagent = predicted reduction (tons) x 0.57 tons reagent/ton NOx reduction

^ Total cost = additional reagent x \$1500/ton reagent

+ Cost per ton = total cost/predicted reduction

As previously noted, EPA's general evaluation of the costs of optimizing an existing and already operating SCR in the 2015 Good Neighbor Plan TSD was estimated to be from \$900/ton

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<sup>45</sup> See Appendix 3 of the TSD for this proposed FIP

<sup>46</sup> See 2015 Good Neighbor Plan TSD at 5.

<sup>47</sup> See *Id.* at 4.

<sup>48</sup> See Appendix 3

to \$1600 per ton of NO<sub>x</sub> removed in 2016 dollars. This includes reagent costs, as well as other VOM costs. EPA calculated the reagent-only portion of those costs to be \$500 per ton of NO<sub>x</sub> removed. Therefore, the remaining, non-reagent VOM costs were determined to be \$400-\$1100 per ton. While other VOM costs may also have risen since this analysis was conducted, it is unlikely that they have been as volatile as soaring reagent costs, and EPA currently does not have reliable, updated information beyond what was presented in the 2015 Good Neighbor Plan on how VOM costs may have risen. Nevertheless, EPA believes that it is unnecessary to re-evaluate the non-reagent VOM costs for the purposes of this bounding analysis, aside from converting the figures to 2022 dollars, because EPA predicts that the effects of any change in non-reagent VOM would be minimal on the ultimate conclusion. Converting the higher non-reagent VOM cost of \$1100/ton NO<sub>x</sub> removed to 2022 dollars provides a revised non-reagent VOM cost of \$1300/ton of NO<sub>x</sub> removed. Combining this updated non-reagent cost and the average reagent cost of \$854/ton NO<sub>x</sub> removed based on updated reagent prices (see Table 5 in this document), EPA estimates that the cost of optimizing the existing SCRs in use at each facility covered by this proposed FIP is approximately \$2154/ton of NO<sub>x</sub> removed. EPA finds this cost to be reasonable by any metric, and determine, therefore, that the proposed limits are economically feasible.<sup>49</sup>

Additionally, while the \$1600/ton of NO<sub>x</sub> removed cost estimate used in the 2015 Good Neighbor Plan was presented on a fleetwide basis, the Retrofit Cost Analyzer estimated individual costs for Homer City Units 1-3, Keystone Units 1 and 2, Conemaugh Unit 1, and Montour, using \$350/ton for a 50% solution of urea. Those costs (in 2021 dollars) ranged from a low of \$980/ton of NO<sub>x</sub> removed for Homer City 3, to a high of \$1152/ton of NO<sub>x</sub> removed for

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<sup>49</sup> In 1985, EPA explained in a memo regarding cost effectiveness for RACT that while it would be inappropriate to set a specific threshold for economic feasibility, because RACT is necessarily a case-by-case determination, “[t]here are sources and source categories for which costs in excess of \$2,000/ton have been determined to be reasonable.” EPA Memorandum titled “Criteria for Determining RACT in Region IV” dated June 19, 1985 ([https://www.epa.gov/sites/default/files/2016-08/documents/criteria\\_for\\_determining\\_ract\\_in\\_region\\_iv\\_6-19-85.pdf](https://www.epa.gov/sites/default/files/2016-08/documents/criteria_for_determining_ract_in_region_iv_6-19-85.pdf)).

Conemaugh.<sup>50</sup> To assess the impact of the present, historic high reagent costs, EPA re-ran the Retrofit Cost Analyzer with a reagent cost of \$1500/ton (of ammonia).<sup>51</sup> EPA notes that we did not modify other parameters in the Retrofit Cost Analyzer to directly convert urea use to ammonia use. Rather, we took the conservative approach of using the highest fertilizer cost in a bounding analysis to evaluate whether past estimates of the cost effectiveness of increased reagent injection were still reasonable. The resulting \$/ton of NO<sub>x</sub> removed estimates ranged from \$2590/ton of NO<sub>x</sub> removed for Homer City 3, to \$2757/ton of NO<sub>x</sub> removed for Conemaugh.<sup>52</sup> Given the likelihood of reagent costs returning to lower, historical levels, and the fact that the remaining costs in the analyses were selected at the 90<sup>th</sup> percentile, EPA believes this bounding analysis to be reasonable and conservative, and that these cost estimates, though higher than the fleetwide averages discussed above, continue to be economically feasible.

#### G. Other Considerations

EPA notes that in each of the draft permits submitted by PADEP, a number of additional control technologies were evaluated by PADEP in addition to SCR, but were determined to be either technologically or economically infeasible. For example, in all cases except Montour, PADEP determined that upgraded low NO<sub>x</sub> burners were economically infeasible.<sup>53</sup> PADEP determined that the costs per ton of NO<sub>x</sub> removed ranged from \$4,077 for Unit 1 at Conemaugh, to \$15,129 for Unit 3 at Homer City. EPA is not evaluating PADEP's determinations related to economic feasibility in this action. However, we did review this information for purposes of developing the proposed FIP, and note that PADEP's source-specific analyses for ultra-low NO<sub>x</sub> burners are higher than the fleet wide estimate of \$1600/ton of NO<sub>x</sub> removed by optimizing SCR

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<sup>50</sup> See "NO<sub>x</sub>\_Control\_Retrofit\_Cost\_Tool\_Fleetwide\_Assessment\_Proposed\_CSAPR\_2015\_NAAQS" in the docket.

<sup>51</sup> This is a high end assumption not necessarily representative of future markets, but used for the purposes of this sensitivity. Combining current market conditions with the RCA methodology would result in approximately \$600 to \$900 ton cost for the urea cost for the future.

<sup>52</sup> See "NO<sub>x</sub>\_Control\_Retrofit\_Cost\_Tool\_Fleetwide\_Assessment\_Proposed\_CSAPR\_2015\_NAAQS\_PA" in the docket.

<sup>53</sup> In the case of Montour, PADEP determined that no upgrade was available, since Montour already has the best available installed.

use that EPA derived in the 2015 Good Neighbor Plan.<sup>54</sup> Furthermore, neither the facilities nor PADEP considered the potential substantial impact that state of the art combustion controls can have on reducing operating costs of SCRs, including extended catalyst life and reducing reagent consumption: “Installation of front-end low-NOx combustion systems or upgrades can essentially reduce total ammonia consumption by as much as 45% and is a viable, cost-effective option to lowering plant cost over the long term.”<sup>55</sup>

Additionally, PADEP also evaluated a number of post combustion technologies in their draft permits for these five facilities. These post-combustion technologies increase the temperature of the flue gas entering the SCR. Such technologies could, in the context of a weighted limit approach, help lower the SCR-off weight by allowing a greater range of SCR-on operating conditions. These include economizer bypass, “V-Temp,” and flue gas reheat. Economizer bypass is installed at Homer City, and the V-Temp system, which similarly reduces heat consumption in the economizer and thus increases inlet temperatures at the SCR, is installed at Conemaugh, but was not used in 2019. PADEP determined that continued operation of V-Temp at Conemaugh was not technically feasible due to cycling operations. In the other cases, PADEP determined installation to be technologically infeasible. Flue gas reheat was not fully analyzed for technological and economic feasibility at any of the sources. Additionally, no analysis was presented to determine whether simply running at moderately higher loads could be an economically feasible method to achieve lower emissions rates. Finally, PADEP also determined in each case that it appeared that the boilers had not been tuned in a manner that would maximize NOx reductions. As part of this proposal, EPA did not evaluate these technologies in the context of our RACT analysis. As stated previously, EPA is proposing that the optimization of the already installed equipment (the SCR) at each of these sources represents

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<sup>54</sup> See 2015 Good Neighbor Plan TSD at 16.

<sup>55</sup> See “Technical Publication: State of the Art Low NOx Burners to Reduce SCR Operating Costs,” Babcock Power; available at <https://www.babcockpower.com/wp-content/uploads/2018/02/state-of-the-art-low-nox-burners-to-reduce-scr-operating-costs.pdf>.

RACT. EPA is proposing rates that greatly reduce the 30-day NO<sub>x</sub> emissions in relation to past performance. Our presumption is that the facilities have the flexibility to change their operations to emit less NO<sub>x</sub> per unit of heat input, and we identify these technologies as additional ways for the facilities to do so, rather than requiring them as RACT. Moreover, we note that multiple control schemes cannot always be implemented simultaneously and do not always necessarily result in cumulative reductions.

#### **IV. Recordkeeping and Reporting for Compliance Assurance**

EPA has included proposed recordkeeping and reporting requirements in the regulatory language for this proposed FIP. The purpose of the requirements is to ensure that each of the facilities subject to the FIP can demonstrate compliance with their respective RACT limits as finalized. EPA is proposing to require that each facility submit a report to EPA every six months containing, among other things, the following: unit-specific daily operating time (hours); unit-specific daily NO<sub>x</sub> mass emissions (lbs); unit-specific daily heat input (MMBtu); unit-specific daily NO<sub>x</sub> emission rate (lb/MMBtu); facility-wide 30-day rolling average NO<sub>x</sub> emission rate (lb/MMBtu). The proposed regulatory language also defines certain terms and specifies the method for calculating the facility-wide 30-day rolling average NO<sub>x</sub> emission rate. These reports are to be submitted to EPA within 30 days after the end of each six month reporting period. In addition, the proposed regulatory language requires the submission of a report containing certain information to EPA within 10 business days if the source violates its 30-day rolling average NO<sub>x</sub> limit or daily mass limit three or more times within any 30-day period. The EPA is soliciting comment on whether the six-month reporting period should be shorter (quarterly) and also on other possible ways to improve the proposed recordkeeping and reporting requirements included in this FIP.

#### **V. Economic Analysis**

Based on the information presented in section III in this preamble, in 2021, NO<sub>x</sub> emissions would have been reduced 6,361 tons. Using \$1600/ton of NO<sub>x</sub> removed cost estimate

as in the 2015 Good Neighbor Plan would result in annual aggregate cost of approximately \$10 million dollars for 2021. As discussed in section III in this preamble, EPA believe that a specific analysis of individual plants would result in a lower estimate.

In order to estimate the benefits of this rulemaking, EPA used a “benefit per ton” (BPT) approach. EPA has applied this approach in several previous Regulatory Impact Analyses (RIA)<sup>56</sup> in which the economic value of human health impacts is derived using previously established source-receptor relationships from photochemical air quality modeling.<sup>57</sup> The rule will reduce emissions of NO<sub>x</sub>, a pollutant that is a precursor to both fine particulate matter (PM<sub>2.5</sub>) and ground-level Ozone; for this reason, we quantify the benefits of reducing each pollutant. These BPT estimates provide the total monetized human health benefits (the sum of premature attributable deaths and premature morbidity for either PM<sub>2.5</sub> or Ozone) of reducing 1 ton of NO<sub>x</sub> from a specified source. This analysis draws upon benefit per-ton values quantified for the Electricity Generating Unit (EGU) sector in Pennsylvania. The method used to derive these estimates is described in the “Technical Support Document on Estimating the Benefit per Ton of Reducing Directly-Emitted PM<sub>2.5</sub>, PM<sub>2.5</sub> precursors and Ozone Precursors from 21 Sectors and its precursors from 21 sectors.”<sup>58</sup> One limitation of using the BPT approach is an inability to provide estimates of the health benefits associated with exposure to nitrogen dioxide, the ambient concentrations of which may also change as a result of this rulemaking. Another limitation is that the photochemical-modeled emissions of the industrial point source sector-

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<sup>56</sup> U.S. EPA. Regulatory Impact Analysis for the Federal Implementation Plans to Reduce Interstate Transport of Fine Particulate Matter and Ozone in 27 States; Correction of SIP Approvals for 22 States. June 2011; Regulatory Impact Analysis for the Final Mercury and Air Toxics Standards, December 2011; and Regulatory Impact Analysis for the Particulate Matter National Ambient Air Quality Standards; December 2012.

<sup>57</sup> Fann N, Fulcher CM, Hubbell BJ. The influence of location, source, and emission type in estimates of the human health benefits of reducing a ton of air pollution. *Air Qual Atmos Health*. 2009;2(3):169-176. doi:10.1007/s11869-009-004-0.

<sup>58</sup> U.S. EPA. 2021. Technical Support Document (BPT TSD) on Estimating the Benefit per Ton of Reducing Directly-Emitted PM<sub>2.5</sub>, PM<sub>2.5</sub> Precursors and Ozone Precursors from 21 Sectors and its precursors from 21 sectors. Technical Support Document. Available at: <https://www.epa.gov/benmap/reduced-form-tools-calculating-pm25-benefits>.



attributable PM<sub>2.5</sub> concentrations used to derive the BPT values may not match the change in air quality resulting from the emissions controls imposed by this FIP. Finally, an additional limitation of this analysis is that we expect in future years that the annual benefits (and cost) estimates will fall because some of these units plan to retire by 2028. Table 6 in this preamble presents the estimated economic value ranges of this proposed action.

**Table 6. Estimated Discounted Economic Value of Avoided PM<sub>2.5</sub> and Ozone-Attributable Premature Deaths and Illnesses for the Federal Implementation Plan, if finalized, in 2022**

Discount Rate	Pollutant	Estimated Economic Value Range (in millions of 2020\$) <sup>A</sup>
3%	Ozone <sup>B</sup>	\$48 and \$350
	PM <sub>2.5</sub>	\$41 and \$42
	<b><i>Sum of Ozone and PM<sub>2.5</sub><sup>C</sup></i></b>	<b><i>\$89 and \$390</i></b>
7%	Ozone	\$43 and \$320
	PM <sub>2.5</sub>	\$37 and \$38
	<b><i>Sum of Ozone and PM<sub>2.5</sub></i></b>	<b><i>\$80 and \$360</i></b>

<sup>A</sup> Values rounded to two significant figures. Benefits quantified using a benefit per-ton estimate.

<sup>B</sup> We estimated ozone benefits for changes in NO<sub>x</sub> for the ozone season and PM<sub>2.5</sub> attributable benefits resulting from annual changes in NO<sub>x</sub>.

<sup>C</sup> Lower value calculated by summing ozone mortality estimated using the pooled short-term ozone exposure risk estimate and the Turner et al. (2016) long-term PM<sub>2.5</sub> exposure mortality risk estimate. Upper value calculated by summing the Turner et al. (2016) long-term ozone exposure risk estimate and the Di et al. (2017) long-term PM<sub>2.5</sub> exposure mortality risk estimate.

## VI. Statutory and Executive Order Reviews

Additional information about these statutes and Executive orders can be found at

<http://www2.epa.gov/laws-regulations/laws-and-executive-orders>.

A. Executive Order 12866: Regulatory Planning and Review and Executive Order 13563:

Improving Regulation and Regulatory Review

This action is not a significant regulatory action and was therefore not submitted to the Office of Management and Budget (OMB) for review.

B. Paperwork Reduction Act

This proposed action does not impose an information collection burden under the provisions of the Paperwork Reduction Act (PRA).<sup>59</sup> A “collection of information” under the PRA means “the obtaining, causing to be obtained, soliciting, or requiring the disclosure to an agency, third parties or the public of information by or for an agency by means of identical questions posed to, or identical reporting, recordkeeping, or disclosure requirements imposed on, *ten or more persons*, whether such collection of information is mandatory, voluntary, or required to obtain or retain a benefit.”<sup>60</sup> Because this proposed rule includes RACT reporting requirements for five facilities, the PRA does not apply.

### C. Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations and small governmental jurisdictions.

For purposes of assessing the impacts of this proposed rule on small entities, small entity is defined as: (1) A small business as defined by the Small Business Administration's (SBA) regulations at 13 CFR 121.201; (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of this proposed rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small

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<sup>59</sup> 44 U.S.C. 3501 *et seq.*

<sup>60</sup> 5 CFR 1320.3(c) (emphasis added).

entities under the RFA. This rulemaking does not impose any requirements or create impacts on small entities as no small entities are subject to the requirements of this proposed rule.

#### D. Unfunded Mandates Reform Act (UMRA)

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104-4, establishes requirements for Federal agencies to assess the effects of their regulatory actions on state, local and tribal governments and the private sector. Under section 202 of UMRA, the EPA generally must prepare a written statement, including a cost-benefit analysis, for final rules with “Federal mandates” that may result in expenditures to state, local, and tribal governments, in the aggregate, or to the private sector, of \$100 million or more (adjusted for inflation) in any one year.

The EPA has determined that this proposed rule does not contain a Federal mandate that may result in any expenditures by state, local or tribal governments, and as explained in this document, the cost to the private sector of the requirements will not exceed the inflation-adjusted UMRA threshold of \$100 million <sup>61</sup> in any one year. Further, this proposed action will not significantly or uniquely affect small governments.

#### E. Executive Order 13132: Federalism

Executive Order 13132, Federalism,<sup>62</sup> revokes and replaces Executive Orders 12612 (Federalism) and 12875 (Enhancing the Intergovernmental Partnership). Executive Order 13132 requires the EPA to develop an accountable process to ensure “meaningful and timely input by State and local officials in the development of regulatory policies that have federalism implications.”<sup>63</sup> “Policies that have federalism implications” is defined in the Executive order to include regulations that have “substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities

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<sup>61</sup> Adjusted to 2019 dollars, the UMRA threshold becomes \$164 million.

<sup>62</sup> 64 FR 43255, 43255-43257 (August 10, 1999).

<sup>63</sup> 64 FR 43255, 43257.

among the various levels of government.”<sup>64</sup> Under Executive Order 13132, the EPA may not issue a regulation “that has federalism implications, that imposes substantial direct compliance costs, . . . and that is not required by statute, unless [the Federal Government provides the] funds necessary to pay the direct [compliance] costs incurred by the State and local governments,” or the EPA consults with state and local officials early in the process of developing the final regulation.<sup>65</sup> The EPA also may not issue a regulation that has federalism implications and that preempts state law unless the agency consults with state and local officials early in the process of developing the final regulation.

This action does not have federalism implications. The proposed FIP will not have substantial direct effects on the states, on the relationship between the National Government and the states, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. Thus, Executive Order 13132 does not apply to this action.

#### F. Executive Order 13175: Consultation and Coordination with Indian Tribal Governments

Executive Order 13175, entitled “Consultation and Coordination with Indian Tribal Governments,” requires the EPA to develop an accountable process to ensure “meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.”<sup>66</sup> This proposed rule does not have tribal implications, as specified in Executive Order 13175. It will not have substantial direct effects on tribal governments. Thus, Executive Order 13175 does not apply to this rulemaking.

#### G. Executive Order 13045: Protection of Children From Environmental Health Risks and Safety Risks

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<sup>64</sup> *Id.*

<sup>65</sup> *Id.*

<sup>66</sup> 65 FR 67249, 67250 (November 9, 2000).

The EPA interprets Executive Order 13045 as applying only to those regulatory actions that concern environmental health or safety risks that the EPA has reason to believe may disproportionately affect children, per the definition of “covered regulatory action” in section 2-202 of the Executive order. This action is not subject to Executive Order 13045 because it implements a previously promulgated health-based Federal standard. Further, the EPA believes that the ozone-related benefits from this proposed rule will further improve children’s health.

#### H. Executive Order 13211: Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use

This action is not subject to Executive Order 13211 (66 FR 28355 (May 22, 2001)), because it is not a significant regulatory action under Executive Order 12866.

#### I. National Technology Transfer and Advancement Act

Section 12 of the National Technology Transfer and Advancement Act (NTTAA) of 1995 requires Federal agencies to evaluate existing technical standards when developing a new regulation. Section 12(d) of NTTAA, Public Law 104-113, 12(d) (15 U.S.C. 272 note) directs the EPA to consider and use “voluntary consensus standards” in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures and business practices) that are developed or adopted by voluntary consensus standards bodies. NTTAA directs the EPA to provide Congress, through OMB, explanations when the agency decides not to use available and applicable voluntary consensus standards.

This proposed rulemaking does not involve technical standards. Therefore, EPA is not considering the use of any voluntary consensus standards.

#### J. Executive Order 12898: Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

Executive Order 12898 establishes Federal executive policy on environmental justice.<sup>67</sup> Its main provision directs Federal agencies, to the greatest extent practicable and permitted by law, to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of their programs, policies and activities on minority populations and low-income populations in the United States.

The EPA believes that this action does not have disproportionately high and adverse human health or environmental effects on minority populations, low-income populations and/or indigenous peoples, as specified in Executive Order 12898. EPA reviewed the Regulatory Impact Analysis (RIA) prepared for the recently proposed 2015 Ozone NAAQS transport FIP, and in particular the Ozone Exposure Analysis at section 7.4 of the RIA.<sup>68</sup> Although that analysis projected reductions in overall AS-MO<sub>3</sub> ozone concentrations in each state for all affected demographic groups resulting from newly proposed limits on EGUs and non-EGUs (see Figure 7-3 of the RIA), it also found that emission reductions from only EGUs would result in national reductions in AS-MO<sub>3</sub> ozone concentrations for all demographic groups analyzed (see Figure 7-2 of the RIA). In summation, that RIA concluded that the proposed FIP is expected to lower ozone in many areas, including residual ozone nonattainment areas, and thus mitigate some pre-existing health risks of ozone across all populations evaluated (RIA, p. 7-32). Further, EPA reviewed an analysis of vulnerable groups near the Conemaugh, Homer City, and Keystone EGUs found in the TSD for EPA's proposed disapproval of the S<sub>02</sub> attainment plan for the Indiana, PA S<sub>02</sub> nonattainment area.<sup>69</sup>

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<sup>67</sup> Executive Order 12898 can be found 59 FR 7629 (February 16, 1994).

<sup>68</sup> The RIA for that separate EPA action can be found at [www.regulations.gov](http://www.regulations.gov) under the docket number EPA-HQ-OAR-2021-0668. Section 7.4 begins on page 7-9.

<sup>69</sup> See [www.regulations.gov](http://www.regulations.gov), Docket EPA-R03-OAR-2017-0615-0059, pp. 14 -17.

Based on EPA's review of those documents, and consideration of the content of this proposed FIP including the proposed NO<sub>x</sub> limits, EPA believes that this proposed FIP will serve to lower ozone levels in many areas, including residual ozone nonattainment areas, and thus mitigate some pre-existing health risks of ozone.

#### **List of Subjects in 40 CFR Part 52**

Environmental protection, Air pollution control, Continuous emission monitoring, Electric power plants, Incorporation by reference, Nitrogen oxides, Ozone, Reporting and recordkeeping requirements.

Michael Regan,  
Administrator.

For the reasons discussed in the preamble, 40 CFR part 52 is proposed to be amended as follows:

#### **PART 52—APPROVAL AND PROMULGATION OF IMPLEMENTATION PLANS**

1.The authority citation for part 52 continues to read as follows:

**Authority:** 42 U.S.C. 7401 *et seq.*

#### **Subpart NN—Pennsylvania**

2. Section 52.2065 is added to read as follows:

**§ 52.2065 Federal implementation plan addressing reasonably available control technology requirements for certain sources.**

(a) *Applicability.* This section shall apply to Cheswick, Conemaugh, Homer City, Keystone, and Montour, as defined in this section, as well as any of their successors or assigns. Each of the five listed facilities are individually subject to the requirements of this section.

(b) *Effective date.* The effective date of this section is **[30 DAYS AFTER FINAL RULE PUBLICATION]**.

(c) *Compliance date.* Compliance with the requirements in this section shall commence immediately upon the effective date, except the Facility-wide 30-Day Rolling Average NOx Emission Rate Limit requirement in paragraph (f)(1) of this section will commence for the Facility on the day that Facility has operated for thirty (30) Operating Days after, and possibly including, the effective date.

(d) *General provisions.* This section is not a permit. Compliance with the terms of this section does not guarantee compliance with all applicable Federal, state, or local laws or regulations. The emission rates and mass emissions limits set forth in this section do not relieve the Facility from any obligation to comply with other State and Federal requirements under the Clean Air Act, including the Facility's obligation to satisfy any State requirements set forth in the applicable SIP.

(e) *Definitions.* Every term expressly defined by this section shall have the meaning given to that term in this section. Every other term used in this section that is also a term used under the Act or in Federal regulations in this chapter implementing the Act shall mean in this section what such term means under the Act or the regulations in this chapter.

*CEMS or Continuous Emission Monitoring System*, means, for obligations involving the monitoring of NOx emissions under this section, the devices defined in 40 CFR 72.2 and installed and maintained as required by 40 CFR part 75.

*Cheswick* means, for purposes of this section, GenOn Power Midwest, LP's Cheswick Generating Station consisting of one coal-fired unit designated as Unit 1 (6,000 MMBtu/hr), located in Springdale, Allegheny County, Pennsylvania.



*Clean Air Act* or *Act* means the Federal Clean Air Act, 42 U.S.C. 7401-7671q, and its implementing regulations in this chapter.

*Conemaugh* means, for purposes of this section, Keystone Conemaugh Project LLC's Conemaugh Generating Station consisting of two coal-fired units designated as Unit 1 (8,280 MMBtu/hr) and Unit 2 (8,280 MMBtu/hr), located in West Wheatfield Township, Indiana County, Pennsylvania.

*Day* or *Daily* means calendar day unless otherwise specified in this section.

*EGU* means electric generating unit.

*EPA* means the United States Environmental Protection Agency.

*Facility* means each of the following as defined in this section: Cheswick; Conemaugh; Homer City; Keystone; and Montour.

*Facility-wide 30-Day Rolling Average NOx Emission Rate* for the Facility shall be expressed in lb/MMBtu and calculated in accordance with the following procedure: first, sum the total pounds of NOx emitted from all Units during the current Operating Day and the previous twenty-nine (29) Operating Days; second, sum the total heat input from all Units in MMBtu during the current Unit Operating Day and the previous twenty-nine (29) Operating Days; and third, divide the total number of pounds of NOx emitted from all Units during the thirty (30) Operating Days by the total heat input during the thirty (30) Operating Days. A new Facility-wide 30-Day Rolling Average NOx Emission Rate shall be calculated for each new Operating Day. Each 30-Day Rolling Average NOx Emission Rate shall include all emissions that occur during all periods within any Operating Day, including, but not limited to, emissions from startup, shutdown, and malfunction.

*Fossil Fuel* means any hydrocarbon fuel, including coal, petroleum coke, petroleum oil, fuel oil, or natural gas.

*Homer City* means, for purposes of this section, Homer City Generation LP's Homer City Generating Station consisting of three coal-fired units designated as Unit 1 (6,792 MMBtu/hr),

Unit 2 (6,792 MMBtu/hr), and Unit 3 (7,260 MMBtu/hr), located in Center Township, Indiana County, Pennsylvania.

*Keystone* means, for purposes of this section, Keystone Conemaugh Project LLC's Keystone Generating Station consisting of two coal-fired units designated as Unit 1 (8,717 MMBtu/hr) and Unit 2 (8,717 MMBtu/hr), located in Plumcreek Township, Armstrong County, Pennsylvania.

*lb/MMBtu* means one pound per million British thermal units.

*Montour* means, for purposes of this section, Talen Energy Corporation's Montour Steam Electric Station consisting of two coal-fired units designated as Unit 1 (7,317 MMBtu/hr) and Unit 2 (7,239 MMBtu/hr), located in Derry Township, Montour County, Pennsylvania.

*NOx* means oxides of nitrogen, measured in accordance with the provisions of this section.

*NOx Emission Rate* means the number of pounds of NOx emitted per million British thermal units of heat input (lb/MMBtu), calculated in accordance with this section.

*Operating Day* means any calendar day on which a Unit fires Fossil Fuel.

*Title V Permit* means the permit required for major sources pursuant to Subchapter V of the Act, 42 U.S.C. 7661-7661e.

*Unit* means collectively, the coal pulverizer, stationary equipment that feeds coal to the boiler, the boiler that produces steam for the steam turbine, the steam turbine, the generator, the equipment necessary to operate the generator, steam turbine, and boiler, and all ancillary equipment, including pollution control equipment and systems necessary for production of electricity. An electric steam generating station may be comprised of one or more Units.

*Unit-specific Daily NOx Mass Emissions* shall be expressed in lb/day and calculated as the sum of total pounds of NOx emitted from the Unit during the Unit Operating Day. Each Unit-specific Daily NOx Mass Emissions shall include all emissions that occur during all periods within any Operating Day, including emissions from startup, shutdown, and malfunction.

(f) *NOx emission limitations.* (1) The Facility shall achieve and maintain their Facility-wide 30-Day Rolling Average NOx Emission Rate to not exceed their Facility limit in Table 1 to this paragraph (f)(1).

**Table 1 to paragraph (f)(1)–Facility-wide 30-Day Rolling Average NOx Emission Rate Limits**

<b>Facility</b>	<b>Facility-wide 30-Day Rolling Average NOx Emission Rate Limit (lb/MMBtu)</b>
Cheswick	0.099
Conemaugh	0.091
Homer City	0.088
Keystone	0.074
Montour	0.069

(2) The Facility shall achieve and maintain their Unit-specific Daily NOx Mass Emissions to not exceed the Unit-specific limit in Table 2 to this paragraph (f)(2).

**Table 2 to paragraph (f)(2)–Unit-specific Daily NOx Mass Emissions Limits**

<b>Facility</b>	<b>Unit</b>	<b>Unit-Specific Daily NOx Mass Emissions Limit (lb/day)</b>
Cheswick	1	14,256
Conemaugh	1	18,084
Conemaugh	2	18,084
Homer City	1	14,345
Homer City	2	14,345
Homer City	3	15,333
Keystone	1	15,481
Keystone	2	15,481
Montour	1	12,117
Montour	2	11,988

(g) *Monitoring of NO<sub>x</sub> emissions.* (1) In determining the Facility-wide 30-Day Rolling Average NO<sub>x</sub> Emission Rate, the Facility shall use CEMS in accordance with the procedures of 40 CFR part 60 and 40 CFR part 75, appendix F, Procedure 1.

(2) For purposes of calculating the Unit-specific Daily NO<sub>x</sub> Mass Emissions Limits, the Facility shall use CEMS in accordance with the procedures at 40 CFR part 75. Emissions rates, mass emissions, and other quantitative standards set by or under this section must be met to the number of significant digits in which the standard or limit is expressed. For example, an emission rate of 0.100 is not met if the actual emission rate is 0.101. The Facility shall round the fourth significant digit to the nearest third significant digit, or the sixth significant digit to the nearest fifth significant digit, depending upon whether the limit is expressed to three or five significant digits. For example, if an actual emission rate is 0.1004, that shall be reported as 0.100, and shall be in compliance with an emission rate of 0.100, and if an actual emission rate is 0.1005, that shall be reported as 0.101, and shall not be in compliance with an emission rate of 0.100. The Facility shall report data to the number of significant digits in which the standard or limit is expressed.

(h) *Recordkeeping and periodic reporting.* (1) The Facility shall electronically submit to EPA a periodic report, within thirty (30) days after the end of each six-month reporting period (January through June, July through December in each calendar year). The portion of the periodic report containing the data required to be reported by this paragraph (h) shall be in an unlocked electronic spreadsheet format, such as Excel or other widely-used software, and contain data for each Operating Day during the reporting period, including, but not limited to: Facility ID (ORISPL); Facility name; Unit ID; Date; Unit-specific total Daily Operating Time (hours); Unit-specific Daily NO<sub>x</sub> Mass Emissions (lbs); Unit-specific total Daily Heat Input (MMBtu); Unit-specific Daily NO<sub>x</sub> Emission Rate (lb/MMBtu); Facility-wide 30-Day Rolling Average NO<sub>x</sub> Emission Rate (lb/MMBtu); Owner; Operator; Representative (Primary); and Representative (Secondary). In addition, the Facility shall maintain the following information for 5 years from

the date of creation of the data and make such information available to EPA if requested: Unit-specific hourly heat input, Unit-specific hourly ammonia injection amounts, and Unit-specific hourly NO<sub>x</sub> emission rate.

(2) In any periodic report submitted pursuant to this section, the Facility may incorporate by reference information previously submitted to EPA under its Title V permitting requirements in this chapter, so long as that information is adequate to determine compliance with the emission limits and in the same electronic format as required for the periodic report, and provided that the Facility attaches the Title V Permit report (or the pertinent portions of such report) and provides a specific reference to the provisions of the Title V Permit report that are responsive to the information required in the periodic report.

(3) In addition to the reports required pursuant to this section, if the Facility exceeds the Facility-wide 30-day rolling average NO<sub>x</sub> emission limit on three or more days during any 30-day period, or exceeds the Unit-specific daily mass emission limit for any Unit on three or more days during any 30-day period, the Facility shall electronically submit to EPA a report on the exceedances within ten (10) business days after the Facility knew or should have known of the event. In the report, the Facility shall explain the cause or causes of the exceedances and any measures taken or to be taken to cure the reported exceedances or to prevent such exceedances in the future. If at any time, the provisions of this section are included in Title V Permits, consistent with the requirements for such inclusion in this section, then the deviation reports required under applicable Title V regulations in this chapter shall be deemed to satisfy all the requirements of this paragraph (h)(3).

(4) Each report shall be signed by the Responsible Official as defined in Title V of the Clean Air Act, or his or her equivalent or designee of at least the rank of Vice President. The signatory shall also electronically submit the following certification, which may be contained in a separate document:

This information was prepared either by me or under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my evaluation, or the direction and my inquiry of the person(s) who manage the system, or the person(s) directly responsible for gathering the information, I hereby certify under penalty of law that, to the best of my knowledge and belief, this information is true, accurate, and complete. I understand that there are significant penalties for submitting false, inaccurate, or incomplete information to the United States.

(5) Whenever notifications, submissions, or communications are required by this section, they shall be made electronically to the attention of the Air Enforcement Manager via email to the following address: R3\_ORC\_mailbox@epa.gov.